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U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1916.

(No. 46; Nos. 41685 to 42383.)



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P. G. Russell, *Scientific Assistants.*
Robert L. Beagles, *Superintendent, Plant Introduction Field Station, Chico, Cal.* E
Orpet, *Assistant in Plant Introduction.*
Edward Simmonds, *Superintendent, Plant Introduction Field Station, Miami, Fla.*
J. E. Morrow, *Superintendent, Yarrow Plant Introduction Field Station, Rockville, Md.*
D. A. Bisset, *Assistant in Charge, Plant Introduction Field Station, Brooksville, Fla.*
Henry E. Juenemann, *Superintendent, Plant Introduction Field Station and Bulb Garden*
Bellingham, Wash.
E. J. Rankin, *Assistant in Charge, Plant Introduction Field Station, Savannah, Ga.*
Edward Goucher, *Plant Propagator.*
Collaborators: Thomas W. Brown, *Gizeh, Cairo, Egypt;* H. M. Curran, *Bahia, Brazil;*
M. J. Dorsey, *University Farm, St. Paul, Minn.;* Robert H. Forbes, *Cairo, Egypt;* A.
Hartless, *Seharunpur Botanic Gardens, Seharunpur, India;* Barbour Lathrop, *Chicago,*
Ill.; H. Nehrling, *Gotha, Fla.;* Charles Simpson, *Littleriver, Fla.;* H. P. Stuckey, *Experiment,*
Ga.; Dr. L. Trabut, *Director, Service Botanique, Algiers, Algeria;* E. H. Wilson,
Arnold Arboretum, Jamaica Plain, Mass.; Dr. Frederick A. Woods, *Washington, D. C.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1916 (NO. 46; NOS. 41685 TO 42383).

INTRODUCTORY STATEMENT.

This forty-sixth inventory of seeds and plants covers a period when no official agricultural explorer was in the field, so the descriptions are all of material sent in by correspondents or collaborators.

The most interesting of the introductions, judged before they are tested, appear to be the following:

Thirty-five selected varieties of wheat (Nos. 42102 to 42136), the result of much work in selection and acclimatization by the plant breeders of Victoria, some of them being of recent introduction into Australia, while others are selections from types of old Australian wheats. These were supplied by Mr. A. E. V. Richardson. Twenty-six varieties of wheat (Nos. 41991 to 42016) from the United Provinces of India, representing some old Indian types, were presented by Mr. H. Martin Leake, of Cawnpore. While none of these may prove especially valuable, it should be kept in mind that it was out of a cross between an Indian wheat, Ladoga, and the Red Fife that the famous Marquis wheat of Canada came.

The discovery by the plant breeders of the Southeastern Agricultural College of England of a nematode-resistant variety of hops, *Humulus lupulus* (No. 42024), should call the attention of growers to the resistance of this variety to the disease known as nettlehead, or skinkly, and it may prove valuable in our hop fields.

Since Mr. C. V. Piper's preliminary study of forage plants during his trip to India in 1911, he has continued to test many of the wild and cultivated grasses of that region, and Nos. 41885 to 41900, 41902 to 41907, 41910 to 41915, and 41918 to 41921 represent a remarkable collection of these grasses presented by Mr. William Burns, the economic botanist of the station at Kirki, India. Among them are included: *Andropogon annulatus* (No. 41885), a species well adapted to the Gulf States; *Cenchrus biflorus* (No. 41894), related to our sand bur, but considered in northern India as one of their most nu-

trititious grasses; *Chloris paraguayensis* (Nos. 41759 and 41897), related to Rhodes grass, but native of Burma and Ceylon, considered a good fodder grass in northern India and in Australia one of the best grasses for pasturage and hay; *Chrysopogon montanus* (No. 41899), a handsome species 3 to 5 feet tall, which already shows promise in Florida and Mississippi; *Iscilema wightii* (No. 41914), a natural pasture grass of India; *Pennisetum ciliare* (No. 41915), a most valuable pasture and hay grass there; and *Thelepogon elegans* (No. 41918), which grows in the Indian rice fields and can scarcely be distinguished from rice until it flowers.

The bread-nut tree of Yucatan, *Brosimum alicastrum* (No. 41880), the leaves of which are extensively used for forage purposes there, deserves trial in southern Florida, according to Dr. Lavedan, who sends the seeds.

Through Mr. Roland McKee, who secured it at the Australian exhibit of the Panama-Pacific Exposition, a collection of Australian fodder grasses (Nos. 41744 to 41762) is now being tested. It includes the extremely productive kangaroo grass, the cockatoo grass, the rice-grass, sugar grass, three species of grasses related to Rhodes grass, and *Panicum distachyon* (No. 41746), which ranks as one of the best of the indigenous grasses of northern Australia.

The true tropical yams (*Dioscorea* spp.) have grown so well in Florida and the quality of their tubers is so excellent that the introduction from Panama by Mr. O. W. Barrett of three selected strains (Nos. 42052 to 42054) is of special interest.

A palm, *Chamaedorea tepejilote* (No. 41705), the inflorescence of which forms a regular source of excellent food in the State of Vera Cruz, Mexico, according to Dr. C. A. Purpus, will grow on sandy soil and might accommodate itself to conditions in Florida.

A tall-growing variety of the ordinary bean, the tawana, or taguana (No. 42049), which climbs 15 to 20 meters into the tops of the high trees in Paraguay and produces heavy crops of beans, will be interesting to bean growers, even though it may not be a valuable acquisition.

The existence in the Dominican Republic of an indigenous walnut, *Juglans domingensis* (No. 41930), related to our black walnut, will interest those engaged in the hybridization of the species of *Juglans*; and the gathering together for propagation and distribution by Mr. C. A. Reed of the hardiest and best seedlings of the Persian or English walnut, *Juglans regia* (Nos. 42022 and 42023 and 42041 to 42045), from New York State and Canada, can not fail to attract attention to the neglect which the horticulturists of our Eastern States have shown to the possibilities of walnut culture on this side of the Rockies.

The Queensland nut, *Macadamia ternifolia* (No. 41808), has grown and fruited so well in California and Florida and its nuts are so delicious that it is a wonder more has not been done with it, especially

in Hawaii, where trees planted 30 years ago have borne good crops, according to Mr. C. S. Judd, of the Board of Commissioners of Agriculture and Forestry, who sends in a quantity of seeds.

Although it is extremely doubtful whether the Tangutian almond, *Amygdalus tangutica* (Nos. 41708 and 41709), can be used as a stock for almonds, it should certainly be hybridized with the ordinary almond, if possible, and the production of a bush almond at least attempted. The large number of seeds sent in by Rev. C. F. Snyder from Kansu, China, may bring about this hybrid.

Although in quality American varieties of the peach lead the world, there may yet be found varieties less susceptible to the many peach diseases than those we have, and the collection (Nos. 41731 to 41743) from Seharunpur, India, may contain such varieties.

The search for grapes suited to the conditions of the Southern States and possibly capable of breeding with the Muscadine has brought in *Vitis tiliaefolia* (No. 41707) from Vera Cruz, Mexico, and *Vitis davidii* (No. 41877), from central China.

The subtropical and East Indian plum, *Prunus bokhariensis* (No. 42057), from Simla, which resembles *Prunus salicina*, may play a rôle in the production of a plum for our Southern States.

The service tree of southern Europe, *Sorbus domestica* (No. 41703), which grows into such a stately, beautiful tree and bears palatable fruits, appears to have been strangely neglected by horticulturists.

Although very many varieties of the Japanese persimmon have already been introduced, the extensive collections from Okitsu (Nos. 41691 to 41702, 41779 to 41793, and 42138 to 42165) may contain some better suited to our conditions or less astringent than those we are testing.

The Brazilian expedition sent out by this office in 1913 discovered in the campo near Lavras a strange and quite remarkable fruit, *Eugenia klotzschiana* (No. 42030), characterized by a marked fragrance. Through the kindness of Mr. Hunnicutt a quantity of seeds has been secured and the species will be given a thorough trial.

Solanum quitoense (No. 42034), the naranjilla of Quito, with fruits the size and color of small oranges, which form the principal article of food of the settlers during certain seasons, should certainly be given a trial in this country.

So much interest has been aroused in the Japanese flowering cherry trees through the gift to the city of Washington by the mayor of Tokyo of a collection of them and through the satisfactory growth which specimen trees have made in Maryland, Massachusetts, and California, that a demand for them has grown up which nurserymen find it difficult to meet. It is of interest, therefore, to point out that 54 varieties (Nos. 41817 to 41870) from the municipal collection of Tokyo, near Arakawa, which represent the loveliest of the hundreds

of varieties known to the Japanese, have been secured through the mayor's courtesy, and these will be propagated and distributed under the same varietal names as those they bear in the Arakawa collection.

Paulownia tomentosa has become such a feature in our parks that a new species of this tree, *Paulownia fortunei* (No. 42036), with larger flowers, from Formosa, will be watched with interest. Benthams's cornel from Nepal, *Cornus capitata* (No. 42287), with dense heads of yellowish flowers and deep-orange fruits, the size of nectarines, will interest those with whom the American dogwood is a favorite.

The oriental species are not the only bamboos of value for timber, and those living in the Tropics will want to test the takuara of Paraguay, *Bambos guadua* (No. 42066), a species evidently too tender for Florida.

Those interested in tropical timber trees will find some remarkable ones in the collections introduced from Madagascar (Nos. 42355 to 42376), Argentina (Nos. 42321 to 42332), or in the famous jequitiba of Brazil (No. 41933), one of the largest and most beautiful of all tropical forest trees, now introduced for the first time by the forest expert, Mr. H. M. Curran, from Bahia.

The manuscript of this inventory has been prepared by Miss Ethel M. Hipkins, the botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., May 31, 1919.

INVENTORY.¹

41685. ERIANTHUS RUFIPILUS (Steud.) Griseb. Poaceæ.

(*Erianthus fulvus* Nees.)

Plume-grass.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Gardens, at the request of the superintendent, Royal Botanic Gardens, Sibpur, near Calcutta. Received January 20, 1916.

A perennial grass, 6 to 8 feet high, found in the temperate Himalayas at altitudes of 5,000 to 7,000 feet. The narrow leaves are 2 to 3 feet long and the panicles are 8 to 18 inches long, gray-white or tinged with purple. (Adapted from *Collett, Flora Simlensis*, p. 595.)

See S. P. I. No. 39689 for previous introduction.

41686. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.

Palm.

From Fruitland Park, Fla. Presented by Mr. Louis P. Bosanquet. Received January 21, 1916.

Stems 30 to 40 feet high, somewhat fusiform above; leaves about half as long as the caudex, the withered ones deflexed, pendent, the upper ones spreading, often arching. In southern Brazil, near the sea, according to recent characterizations, it comprises a wide variety of forms. Probably the *Cocos flexuosa* planted in this country is not *Cocos flexuosa* of Martius, but of Hort., a hardy form of *romanzoffiana*, which, according to the late Barbosa-Rodrigues, is a polymorphic species, including, besides this *flexuosa* type, all our garden forms known as *C. plumosa* Hook., *C. coronata* Hort. (not Mart.), *C. botryophora* Hort., *C. datil* Griseb. and Drude, and *C. australis* Mart. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 814.)

See S. P. I. No. 37745 for previous introduction.

41687. LILIUM GIGANTEUM Wall. Liliaceæ.

Lily.

From Boulder, Colo. Presented by Mr. Theodore D. A. Cockerell. Received January 24, 1916.

"Seeds of *Lilium giganteum* sent by Mr. J. Henry Watson, Withington, Manchester, England. They were grown in 1915 by Sir Herbert Maxwell, of Wistownshire, Scotland." (*Cockerell*.)

"A beautiful, stately lily, rarely cultivated in this country, but hardy as far north as Boston and easily grown in light well-drained soil; should be heavily mulched during the winter; also excellent for greenhouse benches or large tubs. After once flowering, the old bulb decays and disappears, leaving several offsets." (*Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 1877.)

¹ Each introduction consists of seeds, except where otherwise stated.

✓ 41688. *PERSEA AMERICANA* Mill. Lauraceæ.
(*Persea gratissima* Gaertn. f.)

Avocado.

From Guatemala, Guatemala. Presented by Mr. William Owen, American vice consul in charge. Received January 13, 1916.

"Seeds of a very large aguacate, which I consider the finest product of Guatemala in that line. They are high grown, which will enable the tree to thrive better in a northern climate." (Owen.)

41689. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.)

Chayote.

From New Orleans, La. Presented by the J. Steckler Seed Company. Received January 24, 1916.

"Green, spiny."

41690. *CUPRESSUS GLABRA* Sudw. Pinaceæ.

Smooth cypress.

From Sedona, Ariz. Purchased from Mr. J. F. Derrick. Received January 25, 1916.

"Collected in Oak Creek Canyon."

In general appearance the foliage of smooth cypress resembles that of Arizona cypress (*Cupressus arizonica* Greene), though the former species can be distinguished from the latter by the compact, narrowly oval, or somewhat pyramidal crown. The branches of the smooth cypress, particularly of younger trees, are strongly upright. Old trees grown in the open develop long lower branches, which from their great weight are less upright than those of trees of the same age in a close stand. In height the trees range from 25 to 30 feet and in diameter from 10 to 14 inches, though much larger trees probably exist. The trunk is slightly tapering, while the upper portion is sometimes divided into several branches, differing in this respect from the usual undivided stem of Arizona cypress. Only about one-fourth to one-third of the trunk is clear of branches. The most distinctive characteristic of this tree is its thin, smooth, dark purple-red bark. The foliage is a bright blue-green (glaucous). The small spherical cones, composed of six to eight scales and armed with large incurved, somewhat flat-pointed bosses, are borne on short stout stems and mature at the end of the second season. The large size of the seeds at once distinguishes them from those of Arizona cypress, though in color and form the two are similar. Thoroughly seasoned wood is moderately durable in contact with the soil, fence posts lasting about 20 years and corral poles 30 to 35 years. Cabins built of the logs 40 years ago are still in a good state of preservation. The small size of the trees and the limited supply have confined the use of the wood mainly to local needs. The extreme age attained by this species has not yet been determined, but it is probably as long lived as Arizona cypress. The largest trees found so far are at least 200 or 250 years old. (Adapted from *Bulletin No. 207, U. S. Dept. of Agriculture, The Cypress and Juniper Trees of the Rocky Mountain Region, p. 9.*)

✓ 41691 to 41702. *DIOSPYROS KAKI* L. f. Diospyraceæ.

Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiware, Government Horticultural Experiment Station. Received January 8, 1916. Notes by Mr. T. Kiyono, Semmes, Ala.

41691. "No. 1. *Anzai*. Sweet. Kiyoto Province."

41692. "No. 2. *Kubo*. Sweet. Kiyoto Province."

41691 to 41702—Continued.

41693. "No. 3. *Hon-gosho*. Sweet. Nara Province."
41694. "No. 4. *Toyo-oka*. Sweet. Nara Province."
41695. "No. 5. *Fijuwara-gosho*. Sweet. Nara Province."
41696. "No. 6. *Chiomatsu*. Astringent. Kanagawa Province."
41697. "No. 7. *Osoraku*. Astringent. Chiba Province."
41698. "No. 8. *Ibogaki*. Astringent. Miyagi Province."
41699. "No. 9. *Benigaki*. Astringent. Miyagi Province."
41700. "No. 10. *Hira-sanenashi*. Astringent. Yamagata Province."
41701. "No. 11. *Sakushu-mishirazu*. Astringent. Okayama Province."
41702. "No. 12. *Hiragaki*. Astringent. Wakayama Province."

41703. *SORBUS DOMESTICA* L. Malaceæ. Service tree. (*Pyrus sorbus* Gaertn.)

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received January 3, 1916.

"A deciduous tree, usually 30 to 50 feet (occasionally 60 to 70 feet) high. Native of south and east Europe. Flowers white, about one-half inch across, produced in May in panicles at the end of short branches and from the leaf axils, the whole forming a rounded or rather pyramidal cluster $2\frac{1}{2}$ to 4 inches wide. Fruit pear shaped or apple shaped, 1 to $1\frac{1}{4}$ inches long, green or brown tinged with red on the sunny side. As an ornamental tree this is inferior to its ally, the mountain ash, but is well worth growing for the beauty of its foliage and for its flowers, which are larger than usual in this group. It also attains to greater dimensions than any of its immediate allies. The largest tree whose dimensions are recorded by Elwes is growing at Woodstock, Kilkenny, Ireland, which in 1904 was 77 feet high and 10 feet 8 inches in girth. The fruit of the service tree is sometimes eaten in a state of incipient decay, especially in France. Mr. E. Burrell, late gardener to H. R. H. the Duchess of Albany, at Claremont, in a letter dated November 11, 1883, observes that 'we are sending good fruits of the pear-shaped service for dessert at the present time.' This Claremont tree was blown down in 1902, and was then close upon 70 feet high. The timber is of fine quality, being very hard and heavy, but too scarce to count for much." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 295.)

For an illustration of the service tree, see Plate I.

41704. *PRUNUS HORTULANA* Bailey. Amygdalaceæ.

From Courtney, Mo. Presented by Mr. B. F. Bush. Received January 4, 1916.

"The species was first distinguished in 1892 to designate varieties of plums intermediate between *Prunus americana* and *P. angustifolia* (the two species at that time clearly separated); these intermediate varieties were then said to 'represent at least two other species, and perhaps even more,' one of which it was proposed to separate as *P. hortulana*. Later students have separated *P. munsoniana* from these varieties and have redefined other species. Subsequently it was supposed that *P. hortulana* represents a range of hybrids between *P. americana* and *P. angustifolia*, and it is not yet known what part hybridization has played in the origin of these forms, although the evidence accumulates that separate specific types are involved." (*Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2828.)

41705 to 41707.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus.
Received January 5, 1916. Notes from Dr. Purpus.

41705. CHAMAEDOREA TEPEJILOTE Liebm. Phœnicaceæ. **Palm.**

"The undeveloped flower makes an excellent vegetable and is eaten everywhere in the State of Vera Cruz. Besides, it is a fine little palm. Grows in shady places."

41706. PSIDIUM GUAJAVA L. Myrtaceæ. **Guava.**

"Wild guava; in dry and sunny places."

41707. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ. **Grape.**
(*Vitis caribaea* DC.)

"This Vitis has a very sour fruit, but it makes a most excellent jelly, like currant jelly, and is adapted to a tropical country; grows in sunny places in brush woods. *Vitis vinifera* can not be raised here at all."

41708 to 41710.

From Taochow (Old City), Kansu, China. Presented by Rev. C. F. Snyder, at the request of Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 3, 1916.

41708 and 41709. AMYGDALUS TANGUTICA (Batal.) Korsh. Amygdalaceæ.
(*Prunus tangutica* Koehne.) **Tangutian almond.**

"*Amygdalus tangutica* is a variable species of bush almond, and though its kernels are bitter and it throws up a lot of stems and is spiny, still I believe it has a decided value as a factor in breeding experiments, for it seems to be very hardy and drought resistant. One finds it mainly on sheltered rocky and loess slopes at elevations from 4,000 feet above the sea up to about 10,000 feet. In these higher regions, however, it does not get as cold as one would surmise, for the mountains all around keep off the intense cold. As a stock for almonds and for other stone fruits I scarcely would recommend this Tangutian almond, since it suckers badly and these suckers are very hard to remove." (Meyer.)

41708. "Rough shelled."

41709. "Smooth shelled."

41710. PAEONIA SUFFRUTICOSA Andrews. Ranunculaceæ. **Tree peony.**
(*Paeonia moutan* Sims.)

"Seeds of the real wild mountain peony, which occurs in very inaccessible mountain valleys in Tibet proper, where white men are not allowed to go under ordinary circumstances. Ripens its seeds in the Chinese eighth moon (about September 15 to October 20)." (Meyer.)

41711. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**

From Amoy, China. Presented by Miss K. M. Talmage, at the request of Mrs. L. W. Kip. Received January 8, 1916.

"I got this back from the Haicheng." (Talmage.)

41712 to 41717.

From Lamac, Bataan, Philippine Islands. Presented by the Lamac Experiment Station. Received January 10, 1916.

41712. CACARA EROSA (L.) Kuntze. Fabaceæ. **Yam bean.**
(*Pachyrhizus angulatus* Rich.)

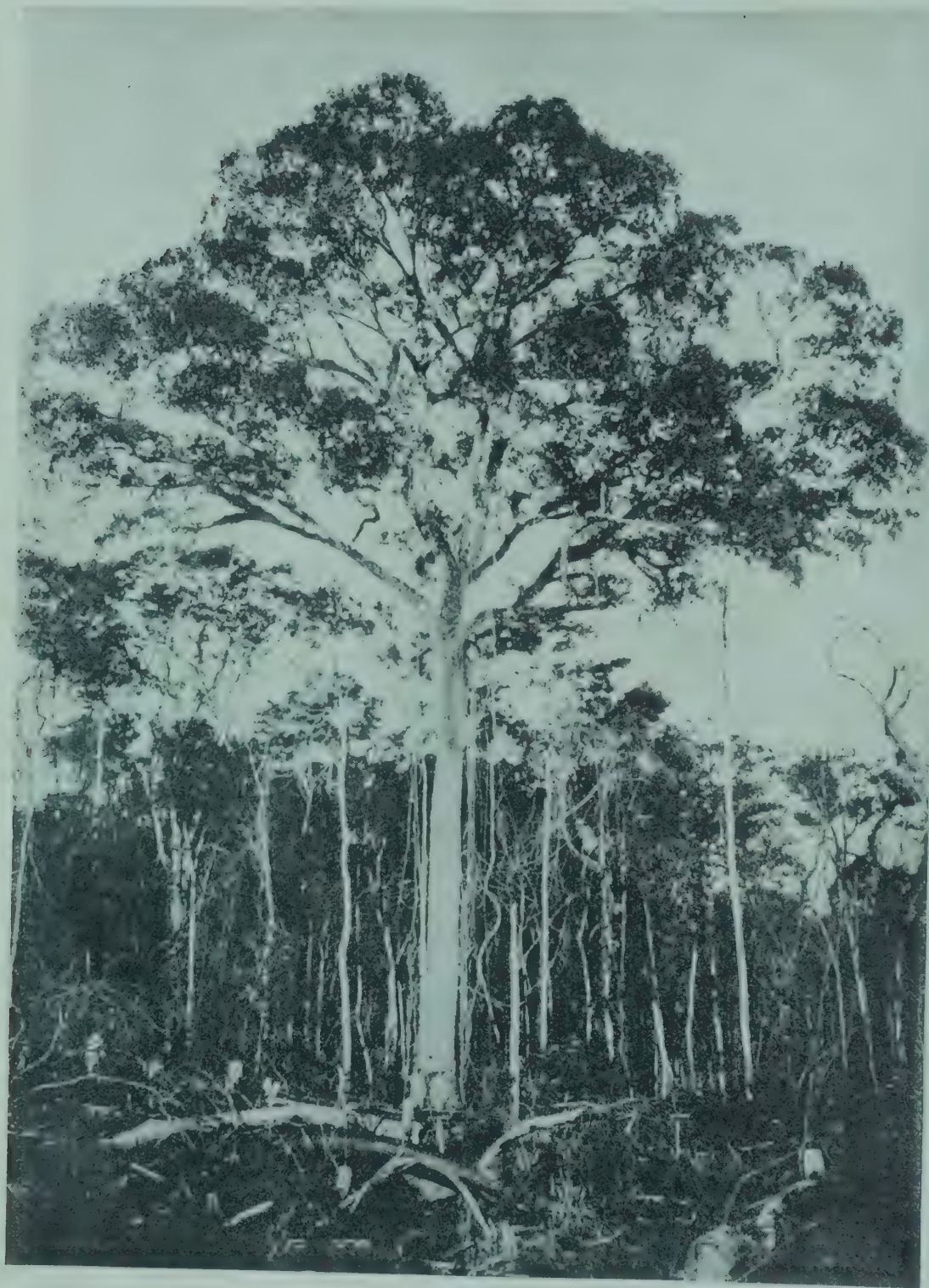
"*Sincamas* (wild)."

"The plant, which in both Guam and the Philippines bears its Mexican name, was probably brought [to Guam] from Mexico. The young root



THE SERVICE TREE, A NEGLECTED MEDITERRANEAN FRUIT TREE. (*SORBUS DOMESTICA* L. SEE S. P. I. Nos. 41703 AND 41804.)

In Italy the sorbo, as this fruit is called, is sold in large quantities by the fruit venders on the streets. Like the European medlar, it is good to eat only when overripe, and even then it has an astringent taste which some people find objectionable. In the old Italian works on agriculture at least six distinct varieties are recognized. They ripen their fruits in September and October, and after pickling these are stored in fruit houses or cellars until overripe. This illustration shows a young tree planted by the French nurseryman, Felix Gillet, in his Barron Hill Nursery, at Nevada City, Cal. From its behavior there it is believed to be capable of cultivation in many places in California. As a tree it is most attractive. (Photographed by David Fairchild, 1902; P1488FS.)



THE JEQUITIBA, A GIANT FOREST TREE OF BRAZIL. (*CARINIANA LEGALIS* (MART.) KUNTZE., S. P. I. No. 41933.)

Although smaller than the sequoia, the giant eucalyptus, or the California redwood, this superb tree deserves to rank with them in magnificent proportions, because of its perfect columnar trunk, which rises like a Corinthian column and supports a magnificent crown of immense branches, each one of which is large enough to make a good-sized tree. Such a wonderful species as this should not be allowed to perish from the face of the earth, and plantings of it deserve to be attempted in our own tropical possessions. There are records of trees of this species which measure 130 feet in height. The jequitiba is related to the tree which bears Brazil nuts, but its nuts are not edible. (Photographed by Señor E. N. de Andrade, Rio Claro, Brazil, whose collections of Brazilian trees, and especially his extensive plantations of eucalyptus, have become world known.)

41712 to 41717—Continued.

is much like a turnip in shape and consistency and is easily peeled like a turnip. It is usually eaten raw and may be prepared with oil and vinegar in the form of a salad. According to Dr. Edward Palmer, it is extensively cultivated in Mexico, where the natives pinch off the blossoms and seed pods, giving as a reason that if the seeds are allowed to mature the roots are not good. In Mexico the roots are much eaten raw, but are also pickled, boiled in soup, and cooked as a vegetable. As they come from the ground they are crisp, sweet, juicy, and of a nutty flavor. They are nourishing and at the same time quench the thirst, so that they are much liked by travelers. One way of preparing the raw roots is to cut them in thin slices and sprinkle sugar over them. They may also be boiled and prepared with batter in the form of fritters, and in Mexico they are often minced or grated, and with the addition of sugar, milk, eggs, and a few fig leaves for flavoring made into puddings." (*Safford, Useful Plants of Guam, p. 204.*)

41713. CITRUS AURANTIUM L. Rutaceæ.

Sour orange.

A small tree 6 to 9 meters in height, with a compact head, young shoots light green, thorny; leaves unifoliate, evergreen, alternate, ovate, pointed, strongly and peculiarly scented; petiole 12 to 18 millimeters long, broadly winged; flowers in small, axillary cymes, white, strongly sweet scented, somewhat larger than those of *Citrus sinensis*; fruit orange colored or frequently reddish when well matured, inclined to be rough; rind strongly aromatic, bitter; pulp acid; juice sacs spindle shaped, rather small; seeds flattened and wedged toward the micropylar end, marked with ridged lines. Native of southeastern Asia, probably in Cochin China. Hardier than the sweet orange. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 10, under Citrus vulgaris.*)

41714. CITRUS EXCELSA Wester. Rutaceæ.

Limon-real.

A tall, thorny shrub of vigorous growth, straggly habit, and interlocking branches with stout, long, sharp thorns; leaves 9.5 to 16 centimeters long, 4.5 to 7 centimeters wide, thick and leathery; petiole quite broadly winged, in large leaves the wings frequently exceeding 2 centimeters in width; flowers three to seven, in axillary, rather loose cymes, 36 millimeters in diameter; petals showing a trace of purple on the outside; fruit 5 to 7.3 centimeters, 5.5 to 7.5 centimeters in equatorial diameter, weight 115 to 225 grams; form subglobose; base rounded; apex flattened; surface smooth, greenish to clear lemon yellow; skin thin; pulp greenish to grayish, in good varieties very juicy, mildly acid, and of excellent flavor; juice cells long, slender, and pointed. Plant material of the *limon-real* has been collected in Tarlac, Bontoc, and Bohol, and the fruit is at rare intervals offered for sale in small quantities in Manila. The name of the plant, *royal lemon*, indicates the esteem in which the fruit is held by the people, and while it is unfortunately true that most of the fruits tested have been too dry to be of any value, yet in the best types the fruits surpass in quality and aroma all lemons and limes that the writer has had the opportunity to sample. Considering the robust, thorny growth, large leaves, and broad-winged petioles, together with the roundish oblate fruit with its 10 to 14 locules, and the flowers with 34 to 35 stamens, as against the 20 to 26 in the lime and lemon, this plant is apparently as distinct from these species as they are from each other. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 26.*)

41712 to 41717—Continued.

41715. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

A spiny shrub, with rather slender, willowy, drooping branches and sharp spines; young growth light green, of pleasant and distinct odor when bruised; leaves 7.5 to 10 centimeters long, 3.5 to 5 centimeters broad, dull green above; petioles 6 to 19 millimeters long with a narrow wing margin; flowers solitary or in cymes of four, terminal or axillary, 28 to 35 millimeters across; calyx rather large, petals four to five, white with a trace of purple on the outside; style not distinct, as in *Citrus aurantium*, but rather similar to that of *Citrus medica*; fruit 5 centimeters long, 4 to 4.5 centimeters across, roundish to roundish oblong; skin thin, smooth, lemon yellow, pulp pale green, juicy, sharply acid, sometimes almost bitter; juice cells long, slender, and pointed; seeds very numerous, small, and plump, polyembryonic. This form seems to be fairly well distributed, and material has been propagated at Lamao from such distinct points as Mindoro, Palawan, and Bangued. Unquestionably a lime, it is quite distinct from the ordinary lime in habit and in the aromatic tender foliage, in the purplish petaled flowers, which are larger than those of the lime, and in the greater number of stamens. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 25 and 26.)

41716. CITRUS MEDICA L. Rutaceæ.

Citron.

41717. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. A small thorny shrub, seldom exceeding 2.5 meters in height, with sharp, stout spines; young growth bright green; leaves 7.5 to 11 centimeters long, 4.3 to 6.5 centimeters broad, elliptical, rather thick and leathery, serrate, of distinct fragrance; base rounded; apex notched; petioles very short, 4 to 6 millimeters long, not winged; flowers one to four in axillary compressed cymes, sessile, rarely exceeding 38 millimeters in diameter; petals four to five, fleshy, white, with a tinge of purple on the outside; fruit 60 to 65 millimeters long, 7 to 10 centimeters in transverse diameter, weighing 300 to 475 grams, oblate, with a shallow basal cavity, and sometimes a mammilate apex, more or less ridged longitudinally, fairly smooth, clear lemon yellow; lenticels scattered, depressed; oil cells large, equal or a trifle raised; skin rather thick; pulp grayish, rather dry, sharply acid, of lemon flavor; juice cells long and slender; seeds many, sometimes 125 in a single fruit, short, broad, and flattened. The *tihi-tihi* is a rare plant found in cultivation in Cebu and Bohol; one plant has been seen in Misamis, Mindanao. The plant is very precocious, fruiting as early as the third year from seed, ever-bearing, and the fruit is used by the Filipinos in washing the hair. It is not eaten and is of no commercial importance. The *tihi-tihi* differs from the citron in its green, tender, highly aromatic growth, the leaves having been found to contain 0.6 per cent essential oil, as analyzed by the Bureau of Science. The fruit is strikingly different from the citron. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 22 and 23.)

41718 to 41721.

From Chungking, China. Presented by Mr. E. Widler. Received January 8, 1916. Quoted notes by Mr. Widler.

41718. CITRUS SINENSIS (L.) Osbeck. Rutaceæ.

Orange.

"Large orange. This orange grows plentifully in Szechwan, is about 11 inches in circumference, of very good flavor, contains a small number of seeds, has a very thin skin and practically no pith."

41718 to 41721—Continued.

41719. CITRUS NOBILIS DELICIOSA (Ten.) Swingle. Rutaceæ.

Mandarin orange.

"*Chü tzu*. Has no pith and is of very good flavor. The skin is dried and boiled and the infusion drunk as a medicine."

41720. FICUS LACOR Buch.-Ham. Moraceæ.

"*Huang ko shu*. A tree 150 feet high, 12 feet in circumference, grows best among rocks in a subtropical climate. It takes about 15 to 20 years to mature in good soil; flowers white. It is used principally for shading purposes on the highroad and in the temples. It is of no commercial value. Seeds yellow, inclosed in a pod."

41721. MOMORDICA CHARANTIA L. Cucurbitaceæ.

Balsam pear.

"*K'u kua*. A creeping plant 10 feet or more, grows best in a climate of 70° to 90° F. It takes about two months to mature; bears white and yellow fruits in autumn. The fruit is about 1 foot long and 3 or 4 inches in circumference. It is used in soups and as a vegetable and is prepared by boiling. It sells in the market for about 20 cash each. Seeds yellow."

41722. PARMENTIERA CEREIFERA Seem. Bignoniaceæ. Candle tree.

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, horticulturist, Agricultural Experiment Station. Received January 4, 1916.

A tropical American tree, with simple or trifoliate leaves, white flowers, and fleshy, cylindrical, yellow fruits, often 4 feet long, resembling wax candles and having a peculiar applelike odor. Cattle are sometimes fattened on these fruits. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 848.*)

See S. P. I. Nos. 26206 and 28674 for previous introductions.

41723. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received January 4, 1916.

"The *zapote prieto* or *zapote negro* (black sapote) of Mexico, an interesting fruit belonging to the persimmon family. The tree grows in compact, shapely form and is of very ornamental appearance with its oblong-oval glossy leaves about 4 inches long. In appearance the fruit greatly resembles some varieties of the kaki or Japanese persimmon; instead of being bright orange, however, they are light green when ripe, and measure $2\frac{1}{2}$ to 3 or even 4 inches in diameter. In shape they are oblate or distinctly flattened, and the persistent light-green calyx is quite prominent. The interior of the fruit, when ripe, is anything but attractive in appearance, the flesh being dark brown or almost black in color and of a greasy consistency. The flavor is sweet, but rather lacking in character; for this reason the Mexicans frequently serve the fruit cut up, or mashed up, with orange juice; it is a first-rate dish. The seeds look like those of the persimmon and are not very numerous." (*Wilson Popenoe.*)

See S. P. I. Nos. 39719, 40338, and 41568 for previous introductions.

41724. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. Okra.
(*Hibiscus esculentus* L.)

From Athens, Greece. Presented by the director of the Royal Agricultural Society. Received January 11, 1916.

"A half-hardy plant introduced into the United States and West Indies from Africa and cultivated for its fruit pods, which are used in soups, stews, catsups,

and the like. In soups and catsups it gives body to the dish; stewed it is mucilaginous, and while at first not agreeable to many persons a taste for it is easily acquired. It is also dried and canned for winter use. When ripe the black or brown white-eyed globular seeds are sometimes roasted and used as a coffee substitute." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2332.*)

41725. PERSEA AMERICANA Mill. Lauraceæ.
(*Persea gratissima* Gaertn. f.)

Avocado.

From Altadena, Cal. Purchased from Mr. F. O. Popenoe, West India Gardens. Received January 12, 1916.

Seeds of a hardy type of avocado, purchased for fumigation experiments.

41726. ARBUTUS ARIZONICA (A. Gray) Sarg. Ericaceæ.

Madroña.

From the Santa Rita Mountains, Arizona. Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 12, 1916.

"This is a tree commonly a meter in circumference and 10 meters high, but often much larger. The old trunks have a bright, light-gray bark and the branches are light osier red. The contrast with the permanent light-green leaves and coral-red berries is very striking. To my mind this is one of the most ornamental of native southwestern trees and should be propagated and widely distributed. Indeed, the whole group of manzanita-arctostaphylos arbutus trees and shrubs are very ornamental broad-leaved evergreens, and our native ones are all but unknown in the trade. It is going to take some careful experimentation to make them ready for handling, but they will probably be found to be no more difficult than the rhododendrons. We need to know how best to propagate them. Some of the manzanitas are easily transplanted, and probably the closely related plants may also be handled in the same way, but trees small enough are not numerous in parts where I have traveled. They are said to grow from hardwood cuttings with difficulty. The trees are usually found under typical forest conditions where the floor is covered with a great deal of débris. They probably require an acid soil. This particular lot of seed comes from an altitude of 6,000 to 7,000 feet in the Santa Rita Mountains, Ariz., where snows are frequent and I judge temperatures must often touch the zero mark. I suggest, since the quantity of seed is small, that the germination be tried under greenhouse conditions. This is transmitted for propagation at Chico, Cal." (*Griffiths.*)

41727. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker. Amyg-
(*Prunus persica platycarpa* Bailey.) [dalaceæ. **Peach.**

From Brisbane, Queensland, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens, Received January 12, 1916.

"Flat China peach, or Peen-to."

41728. CANNABIS SATIVA L. Moraceæ.

Hemp.

From Keijo, Chosen (Korea). Presented by Mr. Kosuke Honda, director, Agricultural and Industrial Model Station, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received January 12, 1916.

"Seed of the 1914 crop grown at this station."

41729. PYRUS SALICIFOLIA Pall. Malaceæ. **Willow-leaved pear.**

From the Caucasus. Presented by Mr. Theodore Kryshstofovich, Russian Government Agricultural Commissioner. Received January 12, 1916.

"It is the most ornamental of all true pears. Its leaves and flowers often open simultaneously, and it then presents a very charming picture, the willow-like leaves being of a conspicuous silky white." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 292.)

See S. P. I. No. 40497 for previous introduction.

41730. VACCINIUM OVATUM Pursh. Vacciniaceæ. **Huckleberry.**

From Ucluelet, Vancouver Island, B. C. Collected by Mr. David Fairchild, of the Bureau of Plant Industry. Received January 12, 1916.

An evergreen shrub of bushy habit, 10 to 12 feet high in England. Leaves small, of firm leathery texture, dark glossy green above, paler beneath, nearly smooth. Flowers produced in September, four to six together in short, nodding racemes from the leaf axils, white, roundish, bell shaped; berry black. Native of western North America. While hardy enough to survive the hardest winters experienced at Kew, it often suffers in severe frost through the cutting back of the younger growth. At Bearwood, in Berkshire, there is a specimen 10 to 12 feet high, which is one of the finest in the country. It is a handsome bush when seen at its best. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 628.)

41731 to 41743.

From India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur. Received January 12, 1916. Descriptive notes by Mr. Hartless.

41731 to 41736. AMYGDALUS PERSICA L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

41731. "Mixed. From Quetta."

41732. "White *Kashmiri*. From Kashmir. Ripens about two weeks after the early variety *Silver* peach [S. P. I. No. 41734]. An indigenous variety, pulp sweet, but the fruit is somewhat smaller than *Large Red*. It is grown from seed."

41733. "*Seharunpur* or *Country*. From Seharunpur. Similar to *Hardoi* [S. P. I. No. 41738] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."

41734. "*Silver* peach. From Kashmir. Early variety. White skin; large fruit, sweet in taste. A grafted foreign variety."

41735. "*Large Red*. From Kashmir. Ripens two weeks after *Large Red* [S. P. I. No. 41736]. The skin and pulp are both red. Commonly known as *Seharunpur*. Grafted."

41736. "*Large Red*. From Kashmir. The skin and pulp are both red. Early variety. Commonly known as *Seharunpur*."

41737. AMYGDALUS PERSICA PLATYCARPA (Decaisne) Ricker. Amygdalaceæ. **Peach.**
(*Prunus persica platycarpa* Bailey.)

"*Flat China* peach, or *Pecn-to*. From Seharunpur. A peculiar Chinese variety, very hardy and of fair quality."

41731 to 41743—Continued.

41738. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

"*Hardoi*. From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Large Agra* [S. P. I. No. 41740], varying according to the localities in which they are grown."

41739. *AMYGDALUS PERSICA NECTARINA* Ait. Amygdalaceæ. Nectarine.

"A nectarine from Kashmir. A French variety; grafted, late."

41740 to 41743. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach:

(*Prunus persica* Stokes.)

41740. "*Large Agra*. From Seharunpur. Similar to *Seharunpur* or *Country* [S. P. I. No. 41733] and *Hardoi* [S. P. I. No. 41738], varying according to the localities in which they are grown."

41741. "Small white *Kashmiri*. From Kashmir. Indigenous late variety grown from seed. Not much taste, though sweet."

41742. "Small red *Kashmiri*. From Kashmir. Indigenous late variety; ripens last of all. Grown from seed."

41743. "*Mai-Cha*. From Seharunpur. A Chinese variety. One of the first to come into bearing; it remains long on the trees."

41744 to 41762. Poaceæ.

Grass.

Procured by Mr. Roland McKee, of the Bureau of Plant Industry, from the Australian exhibit of the Panama-Pacific Exposition, San Francisco, Cal. Received January 14, 1916. Descriptive notes by Mr. McKee except where otherwise indicated.

41744. *CHAETOCHELOA MACROSTACHYA* (H. B. K.) Scribner and Merr.(*Setaria macrostachya* H. B. K.)

"Grows 4 feet tall, leafy, shatters easily. A good fodder."

41745. *MANISURIS COMPRESSA* (L. f.) Kuntze.(*Rottboellia compressa* L. f.)

"For swamp lands and margins of rivers; 5 feet tall, leafy, coarse; fair seed habit."

41746. *PANICUM DISTACHYON* L.

"Excellent pasture and hay grass; 2½ feet tall, leafy; fine seed habits for a *Panicum*."

"The stems of this grass creep and root at the joints; it is an immense yielder and is grown for hay in the northern districts. This is one of several indigenous grasses tested at Gracemere, near Rockhampton, and considered best for the purpose of haymaking." (*Maiden, Useful Native Plants of Australia*, p. 98.)

41747. *ARUNDINELLA NEPALENSIS* Trin.

"Grows 5 feet tall, erect, fairly leafy; good seed habit; wants tropical climate and good soil."

41748. *THEMEDA GIGANTEA AVENACEA* (F. Muell.) Hack.(*Anthistiria avenacea* F. Muell.)

Kangaroo grass.

"A good fodder grass, 6 feet tall, rather coarse, medium leafy; fair seed habit. Tall oat-grass of the downs country."

"In parts it is one of the most productive grasses in Australia, and (unlike other kangaroo grasses) it possesses the advantage of being a

41744 to 41762—Continued.

prolific seeder. It is nutritious and perennial and produces a large amount of bottom fodder. It seeds in November and December, is peculiar to the back country, and is found only on the richest soil, only in a few places, and there over a limited area. It grows in small detached tussocks; the leaves or blades are eaten by stock, but the seed stalks are left standing. All of the colonies except Tasmania." (*Maiden, Useful Native Plants of Australia*, p. 74, under *Anthistiria avenacea*.)

41749. *ISCHAEMUM AUSTRALE VILLOSUM* (R. Br.) Hack.

"Grows 5 feet tall, leafy to top; good seed habit; found on swampy land."

41750. *HOMALOCENCHRUS HEXANDRUS* (Swartz) Kuntze. Rice-grass.
(*Leersia hexandra* Swartz.)

"Grows 3 to 3½ feet tall, very leafy; liked by cattle; found on swampy land; poor seed habit."

41751. *ALLOTEROPSIS SEMIALATA* (R. Br.) Hitchc. Cockatoo grass.
(*Panicum semialatum* R. Br.)

"Cockatoo grass; excellent pasturage; 2 to 3 feet tall, leafy at base; good seed habit. *Lo-ithi* of Batavia River natives."

41752. *DANTHONIA PALLIDA* R. Br. Silver grass.

"White-topped grass; good pasturage; 2 feet tall."

41753. *PANICUM FOLIOSUM* R. Br.

"Handsome broad-leaved grass found usually on broken land; of straggling habit, 2½ feet tall; leafy; fair seed habit."

41754. *POLLINIA FULVA* (R. Br.) Benth. Sugar grass.
(*Pollinia cumingii* Nees.)

"Brown-top. Considered by stock owners to equal the Mitchell grass as a drought resister; on account of its sweetness is often called sugar grass; 3 feet tall; leafy, fine stems; good seed habit."

41755. *HOLCUS FULVUS* R. Br.
(*Andropogon serratus* Thunb.)

"Excellent fodder; 5 feet tall."

41756. *HOLCUS PLUMOSUS* R. Br.
(*Andropogon australis* Spreng.)

"Grass not liked by sheep farmers, but for cattle run it is a very good grass; 2½ feet tall; leafy fine stems; shatters seeds freely."

41757. *THEMEDA FORSKALII* Hack. Kangaroo grass.
(*Anthistiria vulgaris* Hack.)

"Common form of kangaroo grass. There are several forms of this species, but all are equally good fodder grasses; 3 feet tall; fine stems; medium leafy; fair seed habit."

41758. *ARISTIDA CALYCINA* R. Br.

"Good only when young; 2½ feet tall; fine stems."

41759. *CHLORIS PARAGUAIENSIS* Steud.

"An excellent fodder; one of the best grasses for pasturage and hay; 3 feet tall, about like Rhodes grass. Less common than *Chloris virgata*."

41760. *CHLORIS VENTRICOSA* R. Br.

"Blue star grass. Good pasturage; probably the long-awned form of Bentham, in *Flora Australiensis*; 2 feet tall; very fine stems."

41744 to 41762—Continued.**41761.** *CHLORIS VENTRICOSA TENUIS* Benth.

"A good pasture plant, also used for hay; 3 feet tall, fine stems, medium leafy; poor seed habit."

41762. *ANDROPOGON ISCHAEMUM* L.

"Produces a large quantity of coarse feed; 3 to 4 feet tall, leafy; fair seed habit."

41763 to 41769.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41763. *ARCTOMECON HUMILE* Coville. Papaveraceæ.**Poppy.**

A small but handsome poppy, with somewhat hairy, long, wedge-shaped leaves and clusters of large white flowers.

41764. *BERBERIS FREMONTII* Torr. Berberidaceæ.**Barberry.**

A shrub 10 to 20 feet high with rigid, thick leaves, two or three pairs of leaflets, the lowermost spiny, racemes of yellow flowers, and dark-blue berries about the size of currants.

See S. P. I. Nos. 12242 and 28713 for previous introductions.

41765. *BERBERIS REPENS* Lindl. Berberidaceæ.**Barberry.**

A low shrub less than a foot high with bright-green leaves composed of three to seven leaflets and few terminal racemes of yellow flowers which produce attractive clusters of dark-blue berries.

41766. *DELPHINIUM SCAPOSUM* Greene. Ranunculaceæ.**Larkspur.**

A handsome larkspur with leafless flowering stems, rather thick, 3-parted, radical leaves, and terminal racemes of beautiful deep-blue flowers.

41767. *ECHINOCACTUS LECONTEI* Engelm. Cactaceæ.**Cactus.**

Large, ovate cylindrical cactus, often 5 feet high and 2 feet in diameter, with spines up to $2\frac{1}{2}$ inches long, rather fleshy yellow flowers, and yellow fruits 2 to $2\frac{1}{2}$ inches long.

41768. *GERANIUM FREMONTII* Torr. Geraniaceæ.**Crane's-bill.**

Diffuse plant 2 feet high with 3 to 7 parted, pubescent leaves, and clusters of light-purple flowers an inch or more across.

41769. *HEDYSARUM PABULARE* A. Nelson. Fabaceæ.

Perennial herb, with slender, drooping stems, compound leaves, and long racemes of attractive lilac or pale purplish flowers.

41770. *VICIA FABA* L. Fabaceæ.**Broad bean.**

From New Haven, Conn. Presented by Mr. Junzo Kishi. Received January 26, 1916.

"Japanese *sora mame* (sora beans)." (*Kishi.*)

41771 to 41775.

From Salt Lake City, Utah. Presented by Mr. Ben Johnson, Utah Rare Plant Company. Collected in the Great Basin region. Received January 20, 1916.

41771 to 41775—Continued.

- 41771.** *PAROSELA JOHNSONI* (S. Wats.) Vail. Fabaceæ.
(*Dalea johnsoni* S. Wats.)

Diffusely branched shrub with smooth, gray bark, leaves 1 to 2 feet long, composed of 5 to 11 leaflets and loose racemes of deep-purple flowers terminating the leafy branchlets.

- 41772.** *PENTSTEMON PALMERI* A. Gray. Scrophulariaceæ. **Beard-tongue.**

A very attractive species 1½ feet high, with narrow strap-shaped leaves and panicles of pale-purple flowers.

- 41773.** *PENTSTEMON UTAHENSIS* Eastw. Scrophulariaceæ. **Beard-tongue.**

A beautiful and showy plant 1 to 2 feet high, with glaucous foliage and velvety carmine flowers.

- 41774.** *SALAZARIA MEXICANA* Torr. Menthaceæ.

A shrubby plant 2 to 3 feet high, with soft hairy branches crowned with short racemes of purplish flowers. Leaves small, oblong.

- 41775.** *YUCCA ANGUSTISSIMA* Engelm. Liliaceæ.

A very narrow-leaved species. Stemless; leaves three-fourths to 2 inches wide, white bordered; inflorescence 3 to 5 feet high; flowers bell shaped, pure white.

41776 to 41778. JUGLANS REGIA L. Juglandaceæ. Walnut.

From Sibpur, near Calcutta, India. Presented by Mr. C. C. Calder, curator, Royal Botanic Gardens, at the request of Mr. A. C. Hartless, superintendent, Government Botanic Gardens, Seharunpur, India. Received January 26, 1916.

- 41776.** "No. 1. Common walnut."

- 41777.** "No. 2. The large-leaved, large-seeded walnut. The tree of this kind is more spreading than the common kind and not so lofty. It attains a very large size (bulk)." (*Calder.*)

- 41778.** "No. 3. The endocarp of this has three valves instead of two, as in the common species. The tree, though lofty, appears to be of more slender habit than either of the others." (*Calder.*)

41779 to 41793. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiware, Government Horticultural Experiment Station. Received January 22, 1916. Descriptive notes by Mr. T. Kiyono, Semmes, Ala.

- 41779.** "No. 13. *Chijo*. Astringent. Kagoshima Province."

- 41780.** "No. 14. *Moriya*. Astringent. Kagoshima Province."

- 41781.** "No. 15. *Niyorodo*. Sweet. Fukushima Province."

- 41782.** "No. 16. *Oranda-gosho*. Sweet. Fukushima Province."

- 41783.** "No. 17. *Manzu-gaki*. Sweet. Fukushima Province."

- 41784.** "No. 18. *Shyozaemon*. Astringent. Fukushima Province."

- 41785.** "No. 19. *Yotsumimi*. Astringent. Tomiyama Province."

- 41786.** "No. 20. *Mompei*. Astringent. Tomiyama Province."

- 41787.** "No. 21. *Hana-gosho*. Sweet. Tottori Province."

- 41788.** "No. 22. *Yoroi-odoshi*. Astringent. Miyagi Province."

- 41789.** "No. 23. *Gobangaki*. Astringent. Kanagawa Province."

41779 to 41793—Continued.

41790. "No. 24. *Sakata*. Sweet. Niligata Province."
 41791. "No. 25. *Jisha*. Astringent. Niligata Province."
 41792. "No. 26. *Handai*. Astringent. Gunba Province."
 41793. "No. 27. *Rendaiji-hiragaki*. Sweet. Miye Province."

41794 to 41799. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
 (*Sechium edule* Swartz.)

From Kingston, Jamaica. Presented by Mr. W. Harris, Department of Agriculture. Received January 24, 1916. Notes by Mr. Harris.

41794. "Hairy, or spring, green chayote or chocho."
 41795. "Large green chayote or chocho."
 41796. "Round white chayote or chocho."
 41797. "Small green chayote or chocho."
 41798. "Long white chayote or chocho."
 41799. "Ordinary green chayote or chocho."

41800 and 41801. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
 (*Sechium edule* Swartz.) **Chayote.**

From Adjuntas, Porto Rico. Presented by Mr. Bartholomé Barceló. Received January 23, 1916. Quoted notes by Mr. Barceló.

"These varieties produce well in this country on the borders of rayines, in cool places, as in pits, and they are best produced in cool places which have a stream of water. In such places they yield abundantly. The white variety is more appreciated than the green. Here they are used for salads, and the country people also feed them to pigs."

41800. "Large white." 41801. "Large green."

41802. GARCINIA MESTONI F. M. Bailey. Clusiaceæ.
Meston's garcinia.

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916.

An erect, slender, graceful tree 20 feet or more high, with drooping branches, opposite, narrowly lanceolate, glossy, dark-green leaves, white flowers, and globular fruits possessing a sharp, pleasant, acid flavor. (Adapted from *Bailey, A Synopsis of the Queensland Flora, third supplement, 1890.*)

41803 and 41804.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received January 31, 1916.

41803. *MESPILUS GERMANICA* L. Malaceæ. **Medlar.**
 (*Pyrus germanica* Hook. f.)

"Growing wild here in the mountains. The fruits when soft [mellow] give perhaps the best juice which exists. It has an exquisite aroma, somewhat like vanilla." (*Proschowsky.*)

"A low deciduous tree of crooked, picturesque habit, usually under 20 feet high. Leaves almost without stalks, 2 to 5 inches long. Flowers solitary at the end of short leafy branches; about 1 inch across, white

41803 and 41804—Continued.

or slightly pink, produced in May or early June. Fruit apple shaped, brown. This wild medlar is a native of Europe and Asia Minor and is found wild in the woods of several counties in the south of England, but it is not believed to be truly indigenous. It has long been cultivated for its fruit in English orchards, and several named varieties exist. Although much esteemed by those who have acquired a taste for them, medlars are not a popular fruit. They should be left on the trees until the end of October or later, then stored in a fruit room until they are 'bletted,' a term given to indicate a state of incipient decay. A jelly made from the fruits meets a more general taste. It is very hardy, and not particular as to soil." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 81.*)

41804. SORBUS DOMESTICA L. Malaceæ.

Service tree.

(*Pyrus sorbus* Gaertn.)

"Wild here; very good when soft." (*Proschowsky.*)

See S. P. I. No. 41703 for previous introduction and description.

41805 to 41807. ANNONA CHERIMOLA Mill. Annonaceæ.

Cherimoya.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 28, 1916.

41805. "No. 1. Very good variety."

41806. "No. 2. Very good variety."

41807. "No. 3. In my opinion, this is the best variety we have in Costa Rica." (*Wercklé.*)

41808. MACADAMIA TERNIFOLIA F. Muell. Protaceæ.

Queensland nut.

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Board of Commissioners of Agriculture and Forestry. Received January 31, 1916.

"These nuts grew in Honolulu on trees introduced from either Queensland or New South Wales, Australia, about 30 years ago. The fruit on these trees ripens almost throughout the year. Younger trees of this species in Honolulu begin to bear at eight years from planting, and they are readily started from the nuts. The leaf of the tree, which seldom attains a height of more than 30 feet in these islands, is a dark green, very shiny, and resembles the leaf of the eastern chestnut oak. There are only a few bearing trees in Honolulu. The nuts from these are roasted in the same manner as salted almonds and are used on the table for the same purpose. They are crisp and tender and in my opinion far excel salted almonds." (*Judd.*)

41809. MIMUSOPS ELENGI L. Sapotaceæ.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received January 31, 1916.

"The fruit of this species is edible and commonly eaten by young boys, but is sweet and insipid. Being a forest tree the seed should be sown in nurseries and young plants planted in a definite place under cover of some shady shrub while young. They must not be planted directly in open ground." (*Regnard.*)

41810. RANDIA ACULEATA L. Rubiaceæ.**Inkberry.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received January 31, 1916.

"A beautiful, very small-leaved shrub; a very fine hedge plant for cold highlands." (Wercklé.)

"A shrub or small tree, widely distributed in the West Indies. It yields a blue dye, and the wood is used for minor purposes when toughness is required." (Cook and Collins, *Economic Plants of Porto Rico, Contributions from the National Herbarium*, vol. 8, p. 228.)

41811. LINUM USITATISSIMUM L. Linaceæ.**Flax.**

From Lawton, Queensland, Australia. Presented by Mr. Reginald W. Peters, director, Experiment Grounds, at the request of Mr. Leslie Gordon Corrie, Brisbane, Australia. Received February 2, 1916.

"This seed is the result of several years' hybridization and selection in England for length of unbranched fiber and absence of tillers at base." (Peters.)

41812 to 41815.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received February 2, 1916.

41812. CORYLUS FEROX Wall. Betulaceæ.**Hazel.**

"This is a small tree, native of Nepal and Sikkim, found growing at altitudes ranging from 8,000 to 10,000 feet. The fruit, which has an edible kernel, is covered with a prickly cup. The wood is pinkish white in color, moderately hard and even grained." (Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 575.)

See S. P. I. No. 39106 for previous introduction.

41813. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.

(Prunus acuminata Hook. f.)

Laurel cherry.

A laurel cherry from the eastern Himalayas and Assam, at elevations of 4,000 to 7,000 feet, with thin dark bark and reddish brown wood.

See S. P. I. No. 39121 for previous introduction.

41814. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood is a dark olive brown and moderately hard. The wood of this species is used for planking and would do well for tea boxes." (Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 241.)

41815. STYRAX HOOKERI C. B. Clarke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 385.)

See S. P. I. No. 39137 for previous introduction.

41816. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

From Baixa Verde, Rio Grande do Norte, Brazil. Presented by Mr. E. C. Green, superintendent, Serviço do Algodão, Ministério da Agricultura, Rio de Janeiro.

"Legume, growing over a cactus tree 25 feet high and aiding in its destruction; on very dry sandy soil." (Green.)

41817 to 41870. *PRUNUS SERRULATA* Lindl. Amygdalaceæ.

Flowering cherry.

"A collection of scions of 54 named varieties of Japanese flowering cherries, presented by the municipality of Tokyo to the American Government. These scions were cut from authentic trees growing in the famous Arakawa flowering-cherry collection maintained by the Tokyo municipality, which collection, in the opinion of such a noted authority on the subject as Mr. S. Funatsu, contains some of the loveliest forms of these remarkable flowering trees.

"This collection duplicates one which was secured by Mr. E. H. Wilson, of the Arnold Arboretum, in January, 1915 (see S. P. I. Nos. 39743 to 39798 and 39820 to 39826), many of which we were not successful in propagating.

"The arrangements to secure these scions were made by Mr. Frank N. Meyer, agricultural explorer of this office, during his stay in Japan in September, 1915; and Mr. H. Suzuki, manager of the Yokohama Nursery Company, very kindly superintended the collection and shipment of them to this country. Thanks are due to Mr. Post Wheeler, Chargé d'Affaires of the American Embassy in Tokyo, for conducting the arrangements with the Tokyo authorities.

"Mr. Wilson collected flowering botanical specimens from the Arakawa collection, and these are now in the herbarium of the Arnold Arboretum and will be of assistance in checking up the varietal nomenclature, which is much complicated. Several recent works have appeared dealing with the systematic classification of these Japanese flowering or mountain cherries, most important of which are: Sargent, *Plantae Wilsonianae* (*Prunus* by E. Koehne), volume 1, Part II, April 30, 1912; G. Koidzumi, *Conspectus Rosacearum Japonicarum*, Journal of the College of Science, Tokyo, 1913; M. Miyoshi, *Japanische Bergkirschen, ihre Wildformen und Kulturrassen*, Journal of the College of Science, Tokyo, March 20, 1916; E. H. Wilson, *The Cherries of Japan*, Arnold Arboretum, Publication No. 7, March 30, 1916.

"It is evident that radical changes in the botany of the Japanese cherries are coming. Probably some of the varieties included in this collection are classed by Miyoshi as belonging to his species *Prunus mutabilis*, but as yet the nomenclature of the varieties is so confused as to make it inadvisable here to attempt to classify them from their names alone.

"The hardiness of these flowering cherries in many parts of the United States, the fact that they flower at the most bewitching time of the year—April and May—and are peculiarly attractive for small gardens and yards, and that most of them are introduced for the first time into this country make the presentation of this valuable collection by the mayor of Tokyo and his associates a matter of very unusual interest to Americans." (*Fairchild.*)

41817. "*Fukurokuju.*"41828. "*Minakani.*"41818. "*Kirin.*"41829. "*Kokonoye.*"41819. "*Giozanoma-nioi.*"41830. "*Murasakizakura.*"41820. "*Sumizome.*"41831. "*Senrikō.*"41821. "*Meigetsu.*"41832. "*Ranzan.*"41822. "*Kwanzan.*"41833. "*Hatazakura.*"41823. "*Shujaku.*"41834. "*Chōshu-hizakura.*"41824. "*Taki-nioi.*"41835. "*Koshio-yama.*"41825. "*Shōgetsu.*"41836. "*Narazakura.*"41826. "*Washi-no-o* [*Washino-*41837. "*Shirotae.*"41827. "*Kan-zakura.*" [*wo*]."41838. "*Ichiyō.*"

41817 to 41870—Continued.

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| 41839. "Ōjōchin." | 41855. "Ōshima-zakura." |
| 41840. "Yae-akebono." | 41856. "Hitoye-Fudanzakura." |
| 41841. "Gyoikō." | 41857. "Jo-gioi-kō." |
| 41842. "Kongōsan." | 41858. "Beni-tora-no-o." |
| 41843. "Ariyake." | 41859. "Koke-shimidsu." |
| 41844. "Ohsibyama." | 41860. "Asagi-zakura." |
| 41845. "Bendono or Benden." | 41861. "Botanzakura." |
| 41846. "Yedozakura." | 41862. "Surugadai-nioi." |
| 41847. "Hōrinji." | 41863. "Somei-yoshino." |
| 41848. "Shirofugen." | 41864. "Fugenzo." |
| 41849. "Goshozakura." | 41865. "Mikurumagaeshi [<i>kaisi</i>]." |
| 41850. "Amanogawa." | 41866. "Jō-nioi." |
| 41851. "Gijozakura." | 41867. "Taizan-fukun." |
| 41852. "Amayadori." | 41868. "Shirayuki." |
| 41853. "Hakkasan [<i>Hakuka-zan</i>]." | 41869. "Higurashi." |
| 41854. "Ruiran." | 41870. "Unju-zakura." |

41871. *TRACHYCARPUS TAKIL* Beccari. Phœnicaceæ. **Palm.**

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 1, 1916.

"A palm from Mount Takil, Himalayas, closely related to *Trachycarpus martiana*." (*Hartless*.)

41872. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor bean.**

From Tegucigalpa, Honduras. Presented by Mr. Edward W. Perry. Received February 4, 1916.

Seed small, gray, mottled with chocolate brown.

41873. *ANNONA SQUAMOSA* L. Annonaceæ. **Sugar-apple.**

From Chiengrai, Siam. Presented by Dr. W. T. Lyon, Overbrook Hospital and Dispensary. Received February 8, 1916.

"Seeds of a small fruit. It is very delicious but rather full of seeds. It has a close cousin in the oxheart, which is not grown here." (*Lyon*.)

41874 to 41877.

From Shanghai, China. Presented by Mrs. A. Anderson, through Mr. Frank N. Meyer, of the Bureau of Plant Industry. Received January 31, 1916.

41874. *ACONITUM* sp. Ranunculaceæ. **Aconite.**

A hardy ornamental perennial herb of value in masses or borders for its showy flowers and attractive foliage.

41875. *PORANA RACEMOSA* Roxb. Convolvulaceæ. **Snow creeper.**

A large twining annual herb, forming dense masses of white flowers, which, from its resemblance to snow in the jungle, is called "snow creeper" in India, where it is native. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2765.)

41874 to 41877—Continued.

41876. *PAEDERIA FOETIDA* L. Rubiaceæ.

A glabrous pink-flowered vine, the leaves of which when crushed give off a strong odor of hydrogen bisulphid. It has become a troublesome weed among the bamboos at the Brooksville (Fla.) Field Station.

41877. *VITIS DAVIDII* Foex. Vitaceæ.

Grape.

"A luxuriant, deciduous climber, the young shoots not downy, but covered with spiny, gland-tipped, somewhat hooked bristles, which give them a very rough appearance. Leaves heart shaped, slender pointed, toothed; 4 to 10 inches long, shining dark green and smooth above; bluish or greyish green beneath. Fruit said to be about two-thirds inch in diameter, black, and of a pleasant flavor. Native of central China; introduced by Wilson for Messrs. Veitch in 1900, but if, as I believe, the vine called *Spinovitis davidii* is the same, it has been cultivated in France and in England since about 1885." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 667, under *V. armata*.)

41878 and 41879.

From Chungking, China. Presented by Mr. E. Widler. Received February 5, 1916.

41878. *BOEHMERIA NIVEA* (L.) Gaud. Urticaceæ.

Ramie.

"*Ch'u ma*. This plant has a stem 5 to 6 feet high and 1 inch in circumference; the long-stalked leaves are ovate in shape with serrate margin; the under surface is covered with a downy substance and has a silvery appearance. The plant matures in about four months and bears in August. China grass is obtained from the stems of *Boehmeria nivea* and ramie fiber, or rhea, from the stems of a variety of this plant. Both plants, which belong to the stinging-nettle family, have somewhat the habit of the gigantic stinging nettle, but *B. nivea* flourishes in temperate countries and is characterized by the white undersurface of its leaves, while, on the other hand, *B. nivea* var. *tenacissima* requires a more or less tropical climate for its best development and has the under surface of its leaves green. The term *ramie*, however, is applied in commerce to the product of both plants. The local market value for a sample of fiber is 300 cash per cattie. It is used principally for rope, cloth, and famous grass cloth." (Widler.)

"I think that according to the best usage at the present time the plant *Boehmeria nivea* may be called *ramie*. The bark, with the fiber stripped from the ramie plant and dried, without much cleaning, is designated *ramie ribbon*; the cleaned fiber, as it is commonly prepared in China by scraping the bark, is called *China grass*; and the fiber prepared from this grass by degumming and combing is called *ramie filasse*. The long fiber combed out is known as *ramie tops*, and the short tangled fiber combed out in preparing the tops is *ramie noils*." (L. H. Dewey.)

41879. *CROTON TIGLIUM* L. Euphorbiaceæ.

Croton-oil plant.

"*Pa tou*. The first Chinese character composing this name refers to a country which was included within the boundaries of the present eastern Szechwan. It is a few days' journey from Chungking, on a small river. The second character was used because of the resemblance to the soy bean. This plant grows to a height of about 30 feet, 3 feet in circumference. It bears red and white flowers. It takes from five to eight years to grow, and it does best in a temperate climate. In spring

41878 and 41879—Continued.

it bears fruits, which grow to the size of large sparrow's eggs. The seeds are drab outside and whitish inside. They sell in the market for 100 to 150 cash per cattie. This is one of the five principal poisons mentioned by Shen Nung, so the plant is probably indigenous to China. The Arabic name is *ba to*, which was probably derived from the Chinese name. One of the Persian names means *Ricinus* from China, so that it is quite possible that the original habitat of this plant was here. The *pa tou* is oblong, obscurely triangular, about three-quarters of an inch in length, 3-celled, and of a yellowish brown color. Each cell contains an oval, flattened, or imperfectly quadrangular seed, resembling a coffee bean. The dark-brown testa incloses the yellowish albumen, within which is the large dicotyledonous embryo, often much shrunken. The testa is very acrid. The fresh fruits, the oil, the testa, and the root of the tree are all used in medicine. The drug is recommended for a very large number of difficulties, but, generally speaking, the Chinese doctors are afraid to employ it on account of the exaggerated notions of its poisonous properties, which were handed down from very ancient times." (*Widler*.)

41880. BROSIMUM ALICASTRUM Swartz. Moraceæ. Bread-nut tree.

From Merida, Yucatan, Mexico. Presented by Dr. L. Lavedan, New Orleans, La., through Mr. O. F. Cook, of the Bureau of Plant Industry. Received February 11, 1916.

"The leaves are used extensively for forage purposes in Yucatan, as already reported by Mr. G. N. Collins of this office a few years ago. Dr. Lavedan also considers that the seeds, which are produced in great abundance, might be utilized as a source of industrial starch or perhaps distilled into alcohol. I have assured him that we would be interested to test the possibilities of growing this tree, at least in southern Florida." (*Cook*.)

41881. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Cairns, Queensland, Australia. Cuttings presented by Mr. G. Williams, Department of Agriculture and Stock. Received January 31, 1916. Introduced for breeding experiments.

41882. PHASEOLUS CARACALLA L. Fabaceæ. Bertoni bean.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 2, 1916.

S. P. I. No. 37010, received as *Phaseolus bertonii*, a name given by Dr. Franceschi to a Paraguayan bean, is apparently identical with this species.

41883 to 41900.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41883. ALYSICARPUS LONGIFOLIUS (Rottl.) Wight and Arn. Fabaceæ.

"An annual, erect legume growing 3 to 5 feet high; leaves lanceolate; stems slender, rather woody; native to India. In tests in Florida, Mississippi, and elsewhere this plant succeeds well but requires a long summer season to mature. Owing to its sparse leafiness and tough stems, as well as lack of great vigor, it is not promising."

See S. P. I. No. 32432 for previous introduction.

41883 to 41900—Continued.**41884. ALYSICARPUS RUGOSUS (Willd.) DC. Fabaceæ.**

"An annual erect legume, native to southern Asia and Africa and introduced into the West Indies. The species is variable, but several introductions tested in Florida and Mississippi do not give warrant that the plant is worthy of cultivation. The stems are rather tough, spreading or erect, 3 to 4 feet high in some varieties."

For previous introductions, see S. P. I. Nos. 32312, 33444, and 34933.

41885 to 41900. Poaceæ.**Grass.****41885. ANDROPOGON ANNULATUS Forsk.****Palwan.**

"An abundant, native perennial grass in India, much used for fodder, both the yield and quality being good. It belongs to a group of species which are closely interrelated, but all furnish fairly good forage. The species are well adapted to Gulf coast conditions and are at present the subject of careful investigation, as the best of them will probably be worthy of cultivation. *Andropogon annulatus* is a widespread species over Africa and southern Asia. The vernacular name commonly used in the Punjab is *palwan*. Closely related species are *Andropogon pertusus* (the sour-grass of Barbados), *A. caricosus*, and *A. bifoveolatus*."

For previous introductions, see S. P. I. Nos. 32441, 33595, 33596, 34934, and 39716.

41886. ANDROPOGON CARICOSUS L.

"A species much like the preceding and of similar value. Introduced in Antigua, where it is valued as a hay grass."

For previous introduction, see S. P. I. No. 26581.

41887. ANDROPOGON EMERSUS Fourn.

An erect perennial grass, found in dry, rocky places in Mexico and the southwestern United States, with feathery fan-shaped panicles of numerous slender racemes 8 cm. (3 inches) long. The outer glumes of the sessile spikelets are marked with pinholelike pits above the middle. (Adapted from A. S. Hitchcock, in *Contributions from the U. S. National Herbarium*, vol. 17, pp. 202 and 207, under *A. perforatus*.)

41888. ANDROPOGON LAWSONI Hook. f.

"A perennial species with creeping rootstocks, native to Mysore, India."

41889. ANDROPOGON ODORATUS Lisboa.

"A species with odorous herbage and stems 3 to 4 feet high, thick as a goose quill. Native to the Dekkan, India."

41890. ANDROPOGON PUMILUS Roxb.

"A slender species with stem 6 to 18 inches high, native in the drier parts of India."

41891. ANDROPOGON PURPUREO-SERICEUS Hochst.

"An annual species with stems 3 to 4 feet high. Native to Abyssinia and India."

41892. APLUDA ARISTATA Torner.

"A leafy perennial grass, the tall, stiff stems branched above. Readily eaten by cattle when young, according to Duthie, but becoming rather woody."

41883 to 41900—Continued.

41893. *ARUNDINELLA AGROSTOIDES* Trin.

"An annual grass with stems 6 to 18 inches high, the leaves broad and flat. Native to India and the Philippines."

41894. *CENCHRUS BIFLORUS* Roxb.

"A perennial grass, native to southern Asia and Africa. It is abundant in northern India, where it is considered one of the most nutritious grasses and excellent both for grazing and for hay. In Florida and along the Gulf coast it succeeds well and tends to spread naturally, but the growth is sufficient only for grazing, as on sandy soil the grass grows only 6 to 12 inches high."

For previous introductions, see S. P. I. Nos. 33601 to 33603.

41895. *CHIONACHNE BARBATA* (Roxb.) R. Br.

"A tall, coarse, branching grass, native to the hot and damp parts of India. When mature the grass is very coarse, but when young it is said to be used as fodder."

41896. *CHLORIS GAYANA* Kunth.

Rhodes grass.

"A perennial grass, native to South Africa, first cultivated by Cecil Rhodes in South Africa about 1895. The grass is fine stemmed, very leafy, and grows to an average height of about 3 feet. The flowering head consists of 10 to 15 long, spreading spikes in a cluster, and seed is produced in abundance. The grass also spreads by means of running branches 2 to 6 feet long, which root and produce a plant at every node. Notwithstanding this method of reproduction, Rhodes grass has at no place in the United States become troublesome as a weed. Rhodes grass is completely destroyed when the temperature in winter falls to about 18° F., and as a perennial grass is therefore adapted only to southern Texas, Florida, and a narrow strip along the Gulf coast. Farther north it must be treated as an annual. At Washington, D. C., it will produce but a single crop of hay a season. Farther south two cuttings may be obtained under favorable conditions. On fertile land in central and southern Florida, however, as many as six or seven cuttings are secured in a single season. A good stand of Rhodes grass will yield from a ton and a quarter to a ton and a half of hay to a cutting. This hay is of very fine quality and is eagerly eaten by horses and cows. In Florida it is already being grown on a commercial scale."

41897. *CHLORIS PARAGUAIENSIS* Steud.

"A perennial grass native to India, Burma, and Ceylon, but now widespread in the Tropics. According to Duthie, it is considered in northern India 'a good fodder grass up to the time of flowering, after which time cattle will not touch it.' In Australia it is considered one of the best grasses for pasturage and hay."

41898. *CHLORIS VIRGATA* Swartz.

"An annual grass forming stools 2 to 3 feet high. Originally described from the West Indies, but apparently the same species occurs in the Tropics of the Old World. It has been tested at many places in the United States, but nowhere has it given sufficient promise to warrant cultivation. Other introductions under this name, presumably the same species, are S. P. I. Nos. 13895, 13901, 15335, 15337, 15354, 15355, and 21312, all from South Africa, where it is regarded as a valuable grass. No. 21700, from Peking, is apparently a different grass."

41883 to 41900—Continued.

41899. *CHRYSOPOGON MONTANUS* Trin.

"This perennial grass is a handsome species growing to a height of 3 to 5 feet. In India it has an excellent reputation for fodder, and, according to Duthie, the seeds are collected and used for food by the natives. This grass has succeeded well in Florida and at Biloxi, Miss., and in this region possesses some promise as a pasture grass."

For previous introductions, see S. P. I. Nos. 33445 and 34935.

41900. *COIX LACRYMA-JOBI* L.

Job's-tears.

"A coarse, annual grass with unusually numerous stems and leaves one-half to 1½-inches broad. The varieties are numerous, and few of them will mature except in the South. The fruit is peculiar, the female spikelet being inclosed in a capsule composed of a thickened sheath. In most varieties this is hard and porcelainlike, varying in form from cylindrical to globose. These capsules are used as beads for rosaries. In the variety *ma-yuen* the capsules are soft, and in Burma, especially, are used for human food. The largest varieties grow 4 to 8 feet high and furnish abundant forage of fair quality. None has yet found a place in cultivation in the United States except to a slight extent as an ornamental. This grass requires a long warm season to mature."

41901. *HEDYSARUM BOREALE* Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Prof. T. N. Willing, University of Saskatchewan. Received March 16, 1916.

"A perennial leguminous herb with compound leaves and showy racemes of many deflexed magenta to white flowers, native from Newfoundland and northern New England to Alaska; suggested as possibly valuable for breeding with *sulla* (*H. coronarium*), the southern species grown so extensively in Algeria, Tunis, and Spain for fodder." (*Fairchild*.)

41902 to 41916.

From Kirkee, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper except where otherwise indicated.

41902. *DINEBRA ARABICA* Jacq. Poaceæ.

Grass.

"An annual grass with stems branching from the base, erect or ascending, 1 to 3 feet long. A handsome grass, but not abundant in India and therefore unimportant. Native to southern Asia and northern Africa."

41903. *ERAGROSTIS ABYSSINICA* (Jacq.) Schrad. Poaceæ.

Teff.

(*Poa abyssinica* Jacq.)

"*Teff*, cultivated as a food grain in Abyssinia, has in recent years proved very valuable for hay production in South Africa. In view of these results it is at present being tested again in various parts of the United States. Numerous previous trials have indicated that teff can not compete with heavier yielding annuals, such as millet and Sudan grass, as a hay crop, but in some parts of the United States it may yet prove to be valuable."

For previous introduction, see S. P. I. No. 40535.

41902 to 41916—Continued.

41904. *ERAGROSTIS ELEGANS* Nees. Poaceæ.

Grass.

"An annual grass with stems 1 to 3 feet high bearing long, flat leaves. 'It is not considered a first-class fodder grass, but cattle eat it readily when other better kinds have failed.' (*Duthie*.) Indigenous in India, Burma, Ceylon, Mesopotamia, and Africa."

41905. *EUCHLAENA MEXICANA* Schrad. Poaceæ.

Teosinte.

"A coarse annual grass native to Mexico, where it was cultivated in prehistoric times. It resembles corn rather closely, and some botanists consider that corn has been derived from teosinte in the course of long cultivation. The two plants may be hybridized without difficulty.

"Teosinte grows from 8 to 12 feet high and commonly produces many stems from the same root. No variety of it has ever matured north of central Mississippi, but it is commonly grown as far north as New Jersey and Minnesota. The first frosts of autumn promptly turn the leaves brown. For the best results teosinte requires fertile soil and a long season of moist, warm weather.

"Formerly teosinte was grown extensively in the Southern States. On soil of moderate fertility it does not yield as well as the sorghums, and in Florida and along the Gulf coast it can not compete with Japanese sugar cane for forage except on very rich soils.

"Teosinte is best planted in hills 4 to 5 feet apart each way, which requires about 3 pounds of seed per acre; or it may be planted in rows 4 to 5 feet apart, using about 5 pounds of seed per acre. Its cultivation should be essentially the same as for corn.

"The crop may be used for silage, for dry fodder, or for green food. For the latter two purposes it may be cut several times during the season as it promptly tillers from the stubble. For silage, it is better to allow it to become nearly mature.

"Under the most favorable conditions teosinte gives extraordinary yields. Thus, the Louisiana Agricultural Experiment Station secured nearly 50 tons of green fodder per acre; the South Carolina Agricultural Experiment Station reports 43,923 pounds, green weight, per acre from six cuttings and the Georgia Experiment Station 38,000 pounds per acre.

"In spite of these large yields under favorable conditions, the culture of teosinte has diminished, so that it is now little grown. Under ordinary conditions, at least, corn, sorghum, and Japanese sugar cane are preferred."

41906. *HOLCUS HALEPENSIS* L. Poaceæ.

Johnson grass.

(*Sorghum halepense* Pers.)

"Probably var. *miliiformis*, which has smaller, usually unarmed spikelets, the only form common in India."

41907. *HOLCUS SORGHUM SUDANENSIS* (Piper) Hitchc. Poaceæ.

Sudan grass.

41908. *INDIGOFERA GLANDULOSA* Wendl. Fabaceæ.

Befri.

"*Befri* succeeds well as a summer annual from Washington, D. C., southward, but the plant grows only 6 to 8 inches high. For forage, at least, it holds no promise under American conditions."

For previous introductions, see S. P. I. Nos. 22732, 33446, 34936, and especially 23535.

41902 to 41916—Continued.

41909. *INDIGOFERA TRIFOLIATA* Torner. Fabaceæ. Indigo.

A perennial having copiously branched trailing or suberect stems 1 to 2 feet long, soon glabrescent. Found in the Himalayas, ascending to 4,000 feet in Kumaon, to Ceylon and Tenasserim. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 96, under *I. trifoliata* Linn.)

41910. *ISCHAEMUM ARISTATUM* L. Poaceæ. Grass.

"A perennial grass growing 1 to 4 feet high. Indigenous in China, the Malay Peninsula, India, and Ceylon."

41911. *ISCHAEMUM PILOSUM* (Klein) Hack. Poaceæ. Grass.

"A perennial grass with creeping rootstocks, native to India, used for fodder, being cut mainly for buffaloes. A previous introduction, S. P. I. No. 32438, proved to be unviable seed."

41912. *ISCHAEMUM SULCATUM* Hack. Poaceæ. Grass.

"A grass 12 to 18 inches high, with numerous branched stems. Native to central India."

41913. *ISEILEMA ANTHEPHOROIDES* Hack. Poaceæ. Grass.

"Native to southern Dekkan and closely related to *Iseilema laxum*. Presumably its fodder value is also equal."

41914. *ISEILEMA WIGHTII* (Nees) Anderss. Poaceæ. Grass.

"A grass native to India, occurring in low and swampy land. Stems 1 to 3 feet high. Duthie considers its fodder value probably equal to that of *Iseilema laxum*, which is highly valued both as natural pasturage and when cut for hay. Hooker says it is perennial, but *I. laxum* is annual."

41915. *PENNISETUM CILIARE* (L.) Link. Poaceæ. Grass.
(*Pennisetum cenchroides* Rich.)

"One of the most valuable pasture and hay grasses of India. Native to India and Africa and introduced into the American Tropics."

41916. *SESBAN ACULEATUM* (Schreb.) Poir. Fabaceæ.

"A tall, very rapid growing species, reaching a height in one season of 12 to 20 feet in Florida and Mississippi, the stems woody and 2 to 4 inches in diameter. While this species is employed as a green-manure crop in the Tropics, its woody stems and great growth make it undesirable for agricultural use in America."

For a previous introduction, see S. P. I. No. 21368.

41917. *GOSSYPIUM HIRSUTUM* L. Malvaceæ. Cotton.

From Mustapha, Algiers, Algeria. Presented by Dr. L. Trabut. Numbered February, 1916.

"A variety of cotton cultivated at Lemnos, grown without irrigation in ordinary soil." (*Trabut.*)

41918 to 41921.

From Kirki, India. Presented by Mr. William Burns, economic botanist, through Mr. C. V. Piper. Received in January, 1916. Descriptive notes by Mr. Piper.

41918 to 41921—Continued.

41918. *THELEPOGON ELEGANS* Roth. Poaceæ. Grass.

"A coarse perennial grass with stems 1 to 3 feet high, usually woody at the base. When growing in rice fields it is difficult to distinguish until in flower. Cattle and horses eat the herbage when it is young, and in some parts of the Central Provinces the seeds are used as human food. Native to India and Africa."

41919. *THEMEDA QUADRIALVIS* (L.) Kuntze. Poaceæ. Grass.

"A coarse, rather tough annual grass growing in tufts 1 to 3 feet high. It is closely related to the kangaroo grass of Australia and Tasmania. Probably the same as S. P. I. Nos. 13434 and 21637."

41920. *TRACHYS MUCRONATA* Pers. Poaceæ. Grass.

"A perennial grass of sandy land near the seashore, native to southern India and Ceylon. The weak sprawling stems root at the nodes."

41921. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass.
(*Panicum teneriffae* R. Br.)

"When a single plant of Natal grass is allowed abundant room it will form a large tuft, sometimes 3 to 4 feet in diameter. The lower branches soon become decumbent, while the central stems are slender, 3 to 4 feet high, and well covered with leaves, which are so nearly erect that few are lost in mowing the hay. The seeds are produced in large clusters of about the size and shape of a panicle of oats. In most cases the seed clusters are bright red or rosy crimson in color, and for that reason the grass has sometimes been called redtop. It is, however, very different from the common northern grass known as redtop. The name *Natal grass*, which indicates the country of which it is a native, is more appropriate and distinctive, and is the one now in most common use. The plants are killed by a single plowing, and by keeping the land cultivated in other crops through the whole of a single season all the seeds in the ground will have germinated and the young plants will be killed by the cultivation, so Natal grass can not become a troublesome weed."

41922. *RUBUS* sp. Rosaceæ. Bramble.

From San Francisco, Cal. Presented by Mr. John McLaren, Superintendent of Parks and Squares. Received January 21, 1916.

Plants of a *Rubus* apparently not in our collections.

41923. *OPHIPOGON JAPONICUS* (L.) Ker. Liliaceæ.

From Baton Rouge, La. Roots presented by Mr. W. R. Dodson, director, Agricultural Experiment Station. Received February 14, 1916.

A low-growing herbaceous plant, with numerous erect, narrow linear root leaves from one-half to 1 foot long and from one-twelfth to one-eighth inch wide, and racemes of small flowers, varying from white through lilac to violet purple. It is much used in Italy and southern France for green turf and for border edges. It needs no clipping and will stand under the shade of trees, making a dark-green lawn covering, standing well in drought. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2355, 1916.)

41924. ARUNDINARIA PUMILA Mitford. Poaceæ. Bamboo.

From San Francisco, Cal. Roots presented by Mr. John McLaren, Superintendent of Parks and Squares. Received February 15, 1916.

"A very pretty and ornamental dwarf bamboo. At first one might be tempted to confound this species with *Arundinaria humilis*, but closer observation leads to the conviction that it is quite a distinct plant. It is less tall, the leaves are darker green, shorter, and not so broad, and do not taper so gradually to a point as those of *Arundinaria humilis*. The tessellation is closer, the teeth of the serrated edges are, if anything, less conspicuous, and the nodes are less well defined and far less downy; but, on the other hand, they have a waxy bloom not to be found in *A. humilis*. The stem is much more slender and more entirely purple except quite at the base.

"The culms are about 15 inches high or rather more, round, and very slender. The leaves are about 5 inches long by a half to three-quarters of an inch in breadth, bright green in color. Altogether a brilliant little plant, quite hardy, and a very effective ornament for some rocky nook, where, as it does not seem much inclined to run at the roots, it may better be kept within bounds than some of its family." (*Mitford, The Bamboo Garden, p. 98.*)

41925. CARAGANA ARBORESCENS Lam. Fabaceæ. Siberian pea tree.

From Indian Head, Saskatchewan, Canada. Presented by Mr. Norman M. Ross, Forestry Branch. Received February 11, 1916.

41926 and 41927.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn, through Mr. Daniel F. Mooney, American minister, Asuncion. Received February 12, 1916.

41926. CITRUS MEDICA L. Rutaceæ. Citron.
Brazilian citron.

41927. CUCURBITA MAXIMA Duchesne. Cucurbitaceæ. Squash.
A type that may prove of value in the Southwest.

41928. PHASEOLUS SEMIERECTUS L. Fabaceæ.

From Chuluota, Fla. Presented by Mr. Lawrence Swanson. Received February 12, 1916.

"*Jaguario*. My introduction from Cuba, where I found it growing along the banks of the River Jaugua and which has proved of more value as a cover crop than many old stand-bys. It has interested everyone who has seen it growing. It is a perennial and with me has grown again after the tips are frosted. The seeds are very scarce. From observation I think the best results will be had after the first year from seed; in its second and third year it seems to master the ground and spreads rapidly." (*Swanson.*)

41929. INDIGOFERA ARGENTEA L. Fabaceæ. Indigo.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, horticultural division, Gizeh Branch, Ministry of Agriculture. Received February 14, 1916.

"This species is the only one cultivated in Egypt for dye production." (*Brown.*)

"It is a perennial plant, but in cultivation is either biennial or (generally) annual. It is of a woody nature, the dye being extracted from the leaves." (*Foaden and Fletcher.*)

For a full description and directions for cultivation, see Foaden and Fletcher, *Text-Book of Egyptian Agriculture*, pp. 512 to 519.

41930. JUGLANS DOMINGENSIS Dode. Juglandaceæ.

Dominican walnut.

From Puerto Plata, Dominican Republic. Presented by Mr. Frank Anderson Henry, American consul. Received February 17, 1916.

"These walnuts were obtained with the kind assistance of Don Virgilio Batista, of Jarabacoa, near which village the trees are found. The walnut does not appear to be very common in this part of the Dominican Republic and is probably found only at an altitude of more than 1,000 feet above sea level. Jarabacoa has an elevation of about 1,800 feet." (*Henry.*)

41931 to 41945.

From Brazil. Collected by Mr. H. M. Curran. Received February 15, 1916. Descriptive notes by Mr. Curran.

41931. LANTANA CAMARA NIVEA (Vent.) Bailey. Verbenaceæ.

"No. 10. Seed from plants 3 to 4 feet high, growing wild on hills, all flowers pure white; others in region pure red. All shades more delicate than common red and yellow cultivated, form and odor less marked. Collected at Rio de Janeiro, November 21, 1915."

41932. THUNBERGIA sp. Acanthaceæ.

"No. 8. Yellow flowers with dark centers; showy. Green foliage. Wild by roadsides. Ripe seeds collected at Rio de Janeiro, November 21, 1915."

41933. CARINIANA LEGALIS (Mart.) Kuntze. Lecythidaceæ. Jequitiba. (*Couratari legalis* Mart.)

"No. 45. *Jequitiba*. One of the commoner and largest of Bahian timber trees. Ornamental. Wood hard, light brown, and well known in markets."

For an illustration of the jequitiba, see Plate II.

41934. GEONOMA ERYTHROSPADICE Barb.-Rodr. Phœnicaceæ. Palm.

"No. 31. *Orecana brava*. A small ornamental palm, 4 to 10 feet high. The stems, from the size of lead pencils to three-fourths of an inch in diameter, are used as canes and whipstocks. Leaves durable in weather and used as thatch."

41935. IPOMOEA sp. Convolvulaceæ.

"No. 68. A common ornamental in Bahia gardens. A strong, vigorous climber with palmately dissected leaves and large yellow, very bright and very showy flowers."

41936. PTEROCARPUS VIOLACEUS Vog. Fabaceæ.

"No. 23. *Pau de sangue* (bloodwood), a large, very ornamental tree with yellow flowers. Wood, white, soft; used like our basswood."

41937. CYCLOLOBIUM BLANCHETIANUM Tulasne. Fabaceæ.

"No. 20. *Pau de sangue*. An ornamental timber tree."

41938. PELTOGYNE PAUCIFLORA Benth. Cæsalpiniaceæ.

"No. 3. *Pau roxo*. Purple heart, a well-known timber tree, with dark-purple wood, hard and heavy, used for making cart wheels. A large ornamental tree."

41931 to 41945—Continued.

41939. *PTEROCARPUS VIOLACEUS* Vog. Fabaceæ.

"No. 28. *Pau de sangue*. Probably the same as No. 23 [S. P. I. No. 41936]."

41940. *PIPTADENIA* sp. Mimosaceæ.

"No. 19. A large timber tree, with medium-hard wood. Ornamental. Native name *Angico branco*."

41941. *ALPINIA* sp. Zinziberaceæ.

(*Rencalmia* sp.)

"No. 30. *Papatinga*. An ornamental plant 2 to 4 feet high. The fruits yield a black color used as an ink or dye."

41942. *HELICONIA* sp. Musaceæ.

"No. 46. A very ornamental flowering plant which grows in dense masses in moist soils by streams; 2 to 4 feet high; flowers red or yellowish."

41943. *PHYLLANTHUS ACIDUS* (L.) Skeels. Euphorbiaceæ.

(*Phyllanthus distichus* Muell. Arg.)

"No. 47. An ornamental tree 20 to 40 feet high. The fruits are white and used to make preserves as we preserve cherries, etc. Common in cultivation. Fruits freely; two crops a year."

41944. *VOUAPA* sp. Cæsalpiniaceæ.

(*Macrolobium* sp.)

"No. 54. An ornamental timber tree growing on river banks."

41945. *VIROLA* sp. Myristicaceæ.

"No. 41. *Ucuúba*. A common ornamental and timber tree of large size, with brown, medium-hard wood, well known on the Brazilian market. The seed is said to yield an oil used in medicine and for soap making."

41946. *LONICERA ORIENTALIS LONGIFOLIA* Dipp. Caprifoliaceæ.

(*Lonicera Kesselringi* Regel.)

Honeysuckle.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received February 24, 1916.

"Our experience with *Lonicera* seeds is that, like *Berberis* seeds and various others, they often lie in the soil for a year or more before they germinate. What we do is to plunge the pots outside, exposed to the frost, after six to nine months in a propagating house." (*Prain*.)

"It has oblong or oval-lanceolate leaves $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, rarely more than three-fourths inch wide. Flowers pink, smaller than in *orientalis*, the corolla tube only slightly swollen; stalk one-third inch long. Introduced from Kamchatka in 1888." (*Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 51.*)

See S. P. I. No. 40184 for previous introduction.

41947. *HESPERETHUSA CRENULATA* (Roxb.) Roemer. Rutaceæ.

(*Limonia acidissima* L.)

From Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Gardens. Received February 8, 1916.

See S. P. I. Nos. 26496 and 29170 for previous introductions and description as *Limonia acidissima* L.

41948. LICANIA sp. Rosaceæ.

From Merida, Yucatan, Mexico. Presented by Dr. M. Calvino, Department of Agriculture and Commerce. Received February 21, 1916.

"*Uspib.*" Tree with large, entire, leathery leaves and clusters of small inconspicuous flowers. The fruit is said to be edible.

41949 to 41951.

From Havana, Cuba. Presented by Mr. William Brockway. Received February 11, 1916. Quoted notes by Mr. Brockway.

41949. OPERCULINA TUBEROSA (L.) Meissn. Convolvulaceæ.

"No. 1. Climbing vine. The sap from this plant, especially when green, is very milky and sticky and may have rubber possibilities. Should be propagated in a warm climate."

41950. BRADBURYA PLUMIERI (Turp.) Kuntze. Fabaceæ.

"No. 2. Magnificent when in flower. Flower as large as a silver dollar, snow white splashed with scarlet; a fine flower and worthy of cultivation; flowers in November and December. Vines 30 feet long."

41951. PHASEOLUS ADENANTHUS G. Meyer. Fabaceæ.

"No. 3. Flowers white splashed with purple, turning yellow, when matured. Vine 30 feet long, fine climber; flowers in January."

41952 to 41954.

From China. Collected by Mr. D. F. Higgins, Peking. Received February 21, 1916. Descriptive notes by Mr. Higgins.

41952 and 41953. CRATAEGUS PINNATIFIDA Bunge. Malaceæ. Hawthorn.

41952. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the large Chinese thorn-apple, which is grafted on the seedlings of the smaller variety."

41953. "*Sia-la-hung* [*Shan li hung*]. Collected near Peking, China, October 12, 1915. Seeds of the Chinese thorn-apple. These seeds are the seeds of the wild indigenous variety. It is also cultivated for its fruit and for the stock on which the large variety is grafted. These seeds are fertile."

41954. PINUS BUNGEANA Zucc. Pinaceæ.

White-barked pine.

"Seeds of the white-barked pine of North China. These seeds are from trees about 12 miles west of Peking. Collected October 12, 1915."

41955 to 41959.

From Lamac, Bataan, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture, Manila. Received February 17, 1916.

41955. CITRUS AURANTIUM L. Rutaceæ.

Sour orange.

See S. P. I. No. 41713 for previous introduction and description.

41956. CITRUS EXCELSA Wester. Rutaceæ.

Limon-real.

See S. P. I. No. 41714 for previous introduction and description.

41957. CITRUS LIMETTA AROMATICA Wester. Rutaceæ.

See S. P. I. No. 41715 for previous introduction and description.

41958. CITRUS MITIS Blanco. Rutaceæ.

Calamondin.

"A small, somewhat spiny tree, 4 to 6 meters tall; leaves elliptic-oblong, entire, crenulate, 4 to 9 cm. long; petioles scarcely winged, 10 to 15 mm. long; flowers small, usually solitary, white; fruit globose,

41955 to 41959—Continued.

orange-yellow, 2 to 4 cm. in diameter; skin smooth, thin, brittle, separable from the flesh; flesh orange colored, juicy, acid; aroma distinct; juice sacs rather large, short, and contained in six to eight locules; seeds comparatively large, smooth, plump, sometimes beaked. Philippines, probably extending to the Sunda Isles. With the *cabuyao* the *calamondin* shares the distinction of being indigenous to the Philippines. It is still rare in foreign countries. In Hawaii it is known as the *Chinese orange*. The *calamondin* makes an exceedingly attractive ornamental tree, and the fruit makes a delicious marmalade and a good cooling drink. As far as observed the species occurs in few forms, and the trees are almost invariably exceedingly prolific and almost everbearing." (*P. J. Wester, Citriculture in the Philippines, Philippine Bureau of Agriculture, Bulletin No. 27, p. 15.*)

41959. CITRUS WEBBERII MONTANA Wester. Rutaceæ. Cabugao.

A citrus fruit closely allied to the mandarin (*Citrus nobilis deliciosa*) and the alsem (*Citrus webberii*).

See S. P. I. No. 41388 for previous introduction and description.

41960. BUNCHOSIA sp. Malpighiaceæ.

From El Coyolar, Costa Rica. Plants presented by Mr. Carlos Wercklé. Numbered January 30, 1916.

"The pulp is exactly like the *Yemon* variety of the *kaki* persimmon in consistency and taste, but vermilion carmine in color." (*Wercklé.*)

41961 and 41962.

From Kew, England. Plants presented by Sir David Prain, director, Royal Botanic Gardens. Received February 25, 1916.

41961. × AESCULUS PLANTIERENSIS Andre. Æsculaceæ.

"A hybrid raised in the nursery of Messrs. Simon-Louis Frères, at Plantieres, near Metz, its parents no doubt *A. hippocastanum* and *A. carnea*. The seeds came from the former, so that it is (if the generally accepted parentage of *A. carnea* be correct) three-fourths common horsechestnut and one part red buckeye (*A. pavia*). It shows the character of both its parents in the leaf, the leaflets being stalkless, as in *A. hippocastanum*, yet showing the strongly ridged and uneven surface of *A. carnea*. In shape and size the panicle is like that of *A. hippocastanum*, but the whole flower is suffused with a charming shade of soft pink, which it inherited from the other parent. In habit and general appearance it is intermediate. It has flowered at Kew for several years past, and I consider it a very beautiful and desirable acquisition. It has developed no fruit at Kew, and I understand from Mr. Jouin, of Plantieres, that it does not bear seed in the nursery. For public places this is an advantage." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 173.*)

41962. × ESCALLONIA LANGLEYENSIS Veitch. Escalloniaceæ.

"An elegant evergreen or, in hard winters, semievergreen shrub becoming eventually 8 feet or more high and producing long, slender, arching shoots in one season. Flowers of a charmingly bright rosy carmine, one-half inch across, produced during June and July (a few later) in short racemes of about half a dozen blossoms terminating short

41961 and 41962—Continued.

leafy twigs. This very attractive shrub was raised by Messrs. Veitch's nursery at Langley about 1899, by crossing *E. philippiana* with *E. punctata*. Although not quite so hardy as the first of these, it is hardy enough to stand all but the severest of frosts, and even then will break up again from the ground. It is distinct from other Escallonias in its slender arching branches, which bear the racemes on the upper side. The color of the flowers, too, is different from that of any other Escallonia except *E. edinensis*." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 528.)

41963. *BARLERIA CRISTATA* L. Acanthaceæ.

From Manila, Philippine Islands. Cuttings presented by Mr. H. T. Edwards, director, Bureau of Agriculture, at the request of Mr. P. J. Wester, Lamac. Received February 25, 1916.

An excellent Philippine hedge plant with fairly dense spikes of attractive blue or white flowers.

See S. P. I. No. 41458 for previous introduction and description.

41964 to 41990.

From Maidstone, England. Purchased from George Bunyard & Co. Received February 24, 1916. Plants of the following; quoted notes from Bunyard's catalogue, except where otherwise indicated.

41964 to 41976. *RUBUS* spp. Rosaceæ.

Raspberry.

41964. "*Alexandria*. Autumn fruiting; fruit large, conical, deep red, rich flavour; vigorous and fertile. Raised by Mr. Allan, of Gunton Park Gardens."

41965. "*Hailsham*. Autumn fruiting; fruit enormous, round, dark red; growth vigorous; leaves very large; a distinct variety of much excellence. Raised by Mr. Dann, of Hailsham."

"This variety is reported as a hybrid. It is reported by the Coates Nursery, of Morganville, Cal., as an improvement on the loganberry, being sweeter." (G. M. Darrow.)

41966. "*Merville Rouge (Belle Fontenay)*. Autumn fruiting; fruit medium, round, dark purple; growth rather dwarf. A good variety which, though old, is still one of the best and fruits into October."

41967. "*November Abundance*. Autumn fruiting; fruit very large, deep red, borne in clusters; canes very strong; fruits up to November. Introduced by Messrs. Veitch."

41968. "*October Yellow*. Autumn fruiting; fruits large, round, deep yellow, sweet and well flavoured; growth moderate. An old sort, of value as an autumnal variety."

41969. "*Surprise d'Automne*. Autumn fruiting; fruit large, yellow, freely produced, and of sweet flavour. A very remarkable continental variety which is certainly the most prolific and latest of yellow autumnal kinds."

41970. "*Yellow Four Seasons*. Autumn fruiting. Resembles and probably identical with *October Yellow*. Free bearer; very sweet."

41971. "*Baumforth Seedling*. Fruit round, large, dark crimson; very vigorous grower. A seedling from *Northumberland Fillbasket*."

41964 to 41990—Continued.

41972. "*Devon*. Fruit large, round, keeping a bright red when ripe; remarkably vigorous and very fertile. On trial here, but highly commended by the raiser, Mr. Pyne, of Topsham, who introduced it in 1904."

41973. "*Norwich Wonder*. Fruit large, round, ripening earlier than other sorts; very fertile and vigorous."

41974. "*Profusion*. Berries immense, dark red, round, of delicious flavour; vigorous and prolific. A variety raised near Maidstone and introduced by us. Can be highly recommended."

41975. "*Golden Drop*. Fruit deep golden, round, pleasantly flavoured; canes strong. A continental variety of which the original name has been lost; we name it as above provisionally."

41976. "*Guinea*. Fruits conical, deep yellow, very rich and sweet; canes of moderate growth. This variety is a *Yellow Superlative*, and the variety sent out under that name is practically identical."

41977 to 41987. *FRAGARIA* spp. *Rosaceæ*. Strawberry.

41977. "*Merveille de France*. Autumn fruiting; fruit enormous; growth free but compact; very rich flavour in June."

41978. "*St. Antoine de Padoue*. Autumn fruiting; berries globular, ripening well, of bright red colour; habit more vigorous than others; the summer fruits are also abundant."

41979. "*St. Fiacre*. This is a grand autumnal bearer. The berries are as large as *Royal Sovereign*, freely produced, bright colour, and rich flavour. The finest yet produced."

41980. "*Countess*. Fruits handsome, wedge shaped, dark crimson; moderate cropper, but in point of flavour quite first rate. F. C. C. R. H. S."

41981. "*Filbert Pine*. Robust grower; dull orange red, brisk in flavour; succeeds in light soils; enormous cropper."

41982. "*Fillbasket*. Bright red, good flavour; enormous bearer; very good for main crops; flowers late and is thus useful in positions liable to frosts; makes few runners."

41983. "*Givon's Late Prolific*. Dark dull crimson, firm, roundish oval, often three sided, of rich brisk flavour. The very finest of all the late sorts; a heavy successional bearer; fruits extra large and handsome, with good constitution; flowering late, with abundant foliage. A Herts customer reports a splendid crop—seven fruits to the pound."

41984. "*Hibberd's George V*. Our trial plants, although placed in a bad position, gave us wonderful berries on July 8, 1913, after the ordinary crops were passed—quite 14 days later than *Sir Joseph Paxton*. The fruits were large, some cockscomb shaped, very bright shining scarlet in colour; flesh carmine, very firm, and the flavour was equal to the best. We confidently recommend this new variety to all growers and have raised a large stock in order to offer cheaply."

41985. "*Laxton's Latest*. A very fine variety; shining deep crimson, fine flavour; moderate growth; enormous in size, yet firm, approaching 2 ounces."

41964 to 41990—Continued.

41986. "*Reward*. Fruit very large, wedge shaped, of rich vinous flavour, deep red, firm flesh; one of the best main-crop varieties."
41987. "*Waterloo*. Very large, withstanding the heat well; remarkable for its black mulberrylike appearance; for latest picking."
- 41988 to 41990. *RIEES VULGARE* Lam. Grossulariaceæ. Garden currant.
41988. "*New Red Dutch*. Berries medium, but all of an even size; not diminished toward end of bunch; bright red, rather late; vigorous grower, resembling *Raby Castle* in foliage but more spreading habit. One of the best all-round kinds. Origin unknown; largely grown in Kent for market."
41989. "*Scotch*. Berries large, bright red; bunches medium, very fertile; growth vigorous, upright; foliage much cut and cupped. This sort may be always distinguished when in bloom, as the flower spikes are held horizontally. A valuable early-market sort. Origin unknown."
41990. "*Utrecht*. Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety; origin probably indicated by its name."

41991 to 42016. *TRITICUM* spp. Poaceæ.

Wheat.

From Cawnpore, United Provinces, India. Presented by Mr. H. Martin Leake, economic botanist to the Government, at the request of Mr. A. Howard, Pusa. Received January 28, 1916.

41991 to 42006. *TRITICUM AESTIVUM* L.

(*Triticum vulgare* Vill.)

41991. "No. 137. Bearded, red, felted, white grain."
41992. "No. 2778. Bearded, red, felted, red grain."
41993. "No. 169. Bearded, white, felted, white grain."
41994. "No. 195. Bearded, white, felted, red grain."
41995. "No. 627. Bearded, red, glabrous, white grain."
41996. "No. 1056. Bearded, red, glabrous, red grain."
41997. "No. 1289. Bearded, white, glabrous, white grain."
41998. "No. 3769. Bearded, white, glabrous, red grain."
41999. "No. 2755. Bald, red, felted, white grain."
42000. "No. 2771. Bald, red, felted, red grain."
42001. "No. 2799. Bald, white, felted, white grain."
42002. "No. 2822. Bald, white, felted, red grain."
42003. "No. 3794. Bald, red, glabrous, white grain."
42004. "No. 3123. Bald, red, glabrous, red grain."
42005. "No. 3513. Bald, white, glabrous, white grain."
42006. "No. 3561. Bald, white, glabrous, red grain."

42007 to 42012. *TRITICUM DURUM* Desf.

42007. "No. 9. Bearded, white, felted, white grain."
42008. "No. 18. Bearded, red, felted, white grain."
42009. "No. 34. *Kathias*. Bearded, white, glabrous, white grain."

41991 to 42016—Continued.

42010. "No. 47. *Kathias*. Bearded, white, glabrous, red grain."

42011. "No. 85. *Kathias*. Bearded, red, glabrous, white grain."

42012. "No. 124. *Kathias*. Bearded, red, glabrous, red grain."

42013 and 42014. *TRITICUM AESTIVUM* L.

(*Triticum vulgare* Vill.)

42013. "No. 125. Var. *compactum*. Bearded, white, glabrous, white grain."

42014. "No. 132. Var. *compactum*. Bald, white, glabrous, white grain."

42015. *TRITICUM DURUM* Desf.

"No. 2."

42016. *TRITICUM AESTIVUM* L.

(*Triticum vulgare* Vill.)

Var. *compactum*.

42017. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. Hawthorn.

From China. Presented by Rev. Horace W. Houlding, Tamingfu, Chihli, North China. Received February 3, 1916.

"*Shan li hung* or mountain red pear. My wife says that in her estimation it stands next to the apple for home use in cooking. It is good for jelly and marmalade and when dipped whole into melted rock sugar it makes the finest confection and one of the most healthful that I know of. There is a use for this fruit in America." (Houlding.)

42018 and 42019.

From India. Presented by Maj. A. T. Gage, director, Royal Botanic Garden, Sibpur, Calcutta, who secured it from the Director of Agriculture, Srinagar, Kashmir. Received February 24, 1916.

42018. *MEDICAGO FALCATA* L. Fabaceæ.

Lucern.

"Ordinary Ladakh lucern."

42019. *MELILOTUS OFFICINALIS* (L.) Lam. Fabaceæ. Yellow sweet clover.

"*Rugsug* (?) in Ladakh."

42020. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Dasheen.

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

"*Twin* dasheen; local variety. About 40 per cent of the plants are twins. In good soil this variety reaches 6 to 8 feet to leaf blade. Small offsets, but fine large 'madre' up to 4 pounds each. From Bracho plantation." (Barrett.)

42021. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

From Yokohama, Japan. Tubers purchased from the Yokohama Nursery Company. Received March 2, 1916.

Sato-imo.

A taro of the dasheen type, obtained for botanical study, this form having flowered in Japan, where it was photographed by Mr. Frank N. Meyer, although no flowers have ever been obtained from it in the United States.

42022. JUGLANS REGIA L. Juglandaceæ.**Walnut.**

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"*Abrams* walnut. The parent tree of this variety stands on property on Latta Road, Charlotte, N. Y., owned by Mrs. B. S. Abrams. It is a double tree, with trunks measuring at breast height 63 and 69 inches in circumference, respectively. The two trees are estimated to be about 60 feet tall and have a spread of about 55 feet. The tree is said to be a heavy annual bearer. Mrs. Abrams states that the crop of 1914 was about 8 bushels. The nuts are of medium size, quite spherical in form, with flattened ends, bright golden color, thin shelled, and until well dried well sealed. The kernels from the crop of 1915 are a little disappointing in that they shrink considerably; also they are somewhat objectionable in that they leave an astringent taste in the mouth. The flavor of these kernels is pleasing, though mild." (*Reed.*)

42023. JUGLANS REGIA L. Juglandaceæ.**Walnut.**

From Canada. Scions secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 3, 1916.

"*Ontario* walnut. This tree stands on a lot at 251 Queenstown Street, St. Catharines, Ontario, Canada. It is owned by Miss Alice Berger, of that address. It is estimated to be 75 or more years of age and has the reputation of being a heavy annual bearer. Its crop of 1914 is stated by Miss Berger to have been about 200 pounds of nuts. The nuts are of medium size, thin shelled, and the kernels of good quality. In the opinion of Robert T. Morris, of New York City, the flavor of these nuts is superior to that of any others of the sorts now being propagated in the Eastern States. The new growth on this tree was very short and irregular, making it difficult to obtain good wood for propagating." (*Reed.*)

42024. HUMULUS LUPULUS L. Moraceæ.**Hop.**

From Wye, Kent, England. Roots presented by Mr. E. S. Salmon, South-eastern Agricultural College. Received March 3, 1916.

"*Foundling*. Among the hops growing in the experimental hop garden at Wye College one plant attracted attention in 1906 and 1907 by its vigorous growth and prolific cropping qualities. It was decided to test this hop further; cuts were taken from the hill, and, in 1908, 38 hills were planted in a row in the main hop garden at Wye College. From 1908 to 1914 these hills have been under observation, and the following facts appear to be of sufficient commercial importance to merit the attention of hop growers. This hop has proved remarkably resistant to the attacks of the disease popularly known as nettlehead, skinkly, or (in Sussex) silly hill. This disease, which has been attributed to the attacks of an eelworm (*Helicodera schachtii*), is sometimes the cause of serious loss to the hop grower. No certain remedy against nettlehead is at present known, and it follows, therefore, that the constitutional resistance of a variety of hop to the disease is a matter of importance. The growth is very vigorous; the vine is green, with blotches (often inconspicuous) of dark green or red, and is very fruitful. It is a late hop, ripening about 10 days later than the *Canterbury Whitebine*. In the medium hop soil of the college hop garden the crop in an average season is about 15 hundredweight to the acre; in 1914 the hills yielded at the rate of 22 hundredweight to the acre. In richer soil at Chilham, Kent, 3 older hills and 22 hills in their second year bore in 1914 at the rate of 18 hundredweight to the acre. The hops are small to medium in size and hang very thickly on the laterals. In some respects

the *Foundling* hop resembles the *Colgate* variety, though it is clearly quite distinct. The *Foundling* seems worthy of trial by the commercial hop grower on account of the following characteristics: (a) Good cropping qualities, (b) high resin production, (c) marked resistance to if not total immunity from the nettlehead disease, (d) lateness of season (coming after the *Fuggles*).” (*Journal of the Board of Agriculture*, p. 136, May, 1915.)

42025. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*Prosopis juliflora* DC.)

Algaroba.

From St. Joseph, Trinidad, British West Indies. Presented by Mr. Francis Miller, St. Joseph Nurseries. Received February 7, 1916.

A tree 30 to 40 feet high (sometimes reduced to a shrub), with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one to two pairs of pinnæ, and axillary flowers in cylindrical heads resembling those of *Acacia* spp. A native of Mexico and the West Indies.

42026. SOLANUM sp. Solanaceæ.

Wild potato.

From Tucuman, Argentina. Tubers presented by Mr. E. F. Schultz, horticulturist, Agricultural Experiment Station, through Mr. John S. Calvert, American vice consul, Buenos Aires. Received February 23, 1916.

“The Department of Agriculture is carrying on certain breeding experiments with potatoes, and these resistant wild strains may prove useful for this purpose. The tubers were gathered on very heavy clay soil from a piece of land which is completely water-soaked during at least three months in the year and extremely dry for about seven or eight months in succession. The tubers possess, therefore, certain resistant properties which it may be found useful to impart to the cultivated varieties in the United States.” (*Schultz*.)

42027 and 42028.

From Bombay, India. Presented by Mr. W. Burns, economic botanist. Received February 18, 1916.

42027. INDIGOFERA GLANDULOSA Wendl. Fabaceæ.

Befri.

An annual herbaceous legume with elongated slender branches, odd-pinnate leaflets, and dense, sessile heads of small flowers one-fourth to three-eighths of an inch long. A native of Australia and the plains of the western peninsula of India.

42028. INDIGOFERA TRIFOLIATA Torner. Fabaceæ.

Indigo.

A perennial, subshrubby plant with trailing or suberect copiously branched stems, 1 to 2 feet long, leaves composed of three leaflets, and racemes of small red flowers. A native of China, India, the Philippines, Java, and North Australia.

See S. P. I. No. 41909 for previous introduction.

42029. CACARA EROSA (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received February 29, 1916.

“Seeds of the ordinary wild form that is abundant in dry thickets in most parts of the Philippines.” (*Merrill*.)

See S. P. I. No. 41712 for previous introduction.

42030 and 42031.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt, director, Escola Agricola de Lavras. Received February 29, 1916.

42030. *EUGENIA KLOTZSCHIANA* Berg. Myrtaceæ. Pera do campo.

A promising fruit, similar to a small russet pear in appearance, and possessing a pleasantly acid, aromatic pulp.

See S. P. I. Nos. 37392 and 37492 for previous introductions and description.

42031. *MYRCIARIA* sp. Myrtaceæ. Jaboticaba.

A large tree bearing fruits somewhat similar to grapes of the rotundifolia type. One of the most popular Brazilian fruits.

42032 to 42035.

From Quito, Ecuador. Presented by Mr. Ludovic Söderström, through Mr. Charles S. Hartman, American minister, Quito. Received February 29, 1916. Quoted notes by Mr. Söderström.

42032. *PASSIFLORA MIXTA* L. f. Passifloraceæ. Granadilla.

"Seeds of the Passiflora, which was formerly much cultivated in the gardens at Quito but is now rarely seen. This plant is very prolific, and in my garden I have sometimes counted over 100 flowers and fruits at one time on the same plant. In the garden there are two plants from 16 to 20 years old. The natives eat the fruit raw and also use it to flavor ice cream, etc. The altitude of Quito is 9,500 feet. Collected during the months of August to December."

42033. *PASSIFLORA* sp. Passifloraceæ. Granadilla.

"Seeds of a Passiflora much cultivated by the Indians in the Valley of Zambiza, northeast of Quito. The fruit is smaller than the preceding variety [S. P. I. No. 42032], is sweeter, and contains more seeds. The flower is much attacked by bats and mice, so that at Quito the plant seldom has fruits. It also requires a warmer climate, 17° to 18° C. The Zambiza Valley is about 1,000 to 1,500 feet lower than Quito and much warmer. Collected during the months of September and October."

42034. *SOLANUM QUITOENSE* Lam. Solanaceæ.

"*Naranjilla*; so called by the natives. The plant is about 6 to 8 feet high with hairy leaves and produces a fruit like a small orange; it is rather acid to taste. Each plant bears hundreds of flowers and fruits. The plant lasts five or six years, when a new plantation is made. The best plantations are in the clearings at about 5,000 to 6,000 feet altitude. The mean temperature is 17° to 19° C. The fruit seems to be the principal article of food during certain seasons for the settlers in the woods. I have never found that this plant flourishes in the dry valleys in the interior, but always in the clearings in the woods."

42035. *PASSIFLORA LIGULARIS* Juss. Passifloraceæ. Sweet granadilla.

"*Granadilla* or passion-flower plant. This plant is cultivated in all the warm valleys in the interior of Ecuador. I have even found this plant growing wild in the woods at about 6,000 feet altitude. In the woods the squirrels always eat the fruit, so very few seeds can be collected there."

42036. PAULOWNIA FORTUNEI (Seem.) Hemsl. Scrophulariaceæ.

From Taihoku, Formosa. Presented by Mr. M. Takata, Department of Productive Industries. Received March 2, 1916.

"In raising the Paulownia tree in Japan its root is generally used for the purpose, because its seed has not been known to germinate. We should like, therefore, to have you give special attention to the matter of sowing and directing the growth of the young plants." (*Takata*.)

A magnificent tree 30 to 50 feet high, much resembling the well-known *Paulownia imperialis* (*P. tomentosa*), but having slightly shorter panicles of larger lilac or purple tinted flowers dotted with purple on the inside of the corolla. A native of central Formosa. (Adapted from *T. Ito, Icones Plantarum Japonicarum, vol. 1, no. 3, p. 5, pl. 9, 1912.*)

Received as *Paulownia mikado*, which is considered by Rehder to be identical with *P. fortunei*.

42037. LINUM USITATISSIMUM L. Linaceæ.**Flax.**

From Saskatoon, Saskatchewan, Canada. Presented by Mr. F. Maclure Sclanders, commissioner, Board of Trade. Received March 2, 1916.

"*Riga* (Russian) flax. Received from the Department of Agriculture, Dublin, Ireland. I am asked to test this for seed production, the object being to ascertain if we can here grow to advantage seed for the Irish flax-fiber growers, which seed now comes from Russia and costs more than we could probably supply it for. Apparently some clear distinction is drawn between the flax which we now produce for seed and that which is adapted for the production of fiber." (*Sclanders*.)

42038. SAPINDUS SAPONARIA L. Sapindaceæ.**Soapberry.**

From Monterey, Mexico. Presented by the Compañía Jabonera. Received March 2, 1916.

"*Jaboncillo*. Fresh fruits. The outer part when boiled in water gives a superior soap for washing, especially for woolen goods, and is much used. The seed is hard and contains fat; it is not used. We consider this fruit of interest as well for the pulp, which yields soap, as for the seed, which may be of some use." (*Compañía Jabonera*.)

42039 and 42040.

From Horqueta, Paraguay. Presented by Mr. Thomas R. Gwynn. Received March 3, 1916.

42039. PSIDIUM GUAJAVA L. Myrtaceæ.**Guava.**

"Seeds of a large fruit; when ripe it is a light green outside and a beautiful pink inside." (*Gwynn*.)

42040. RANDIA sp. Rubiaceæ.

"*Azuca revine* (?)" A spiny erect shrub with showy flowers and fruit.

42041 to 42045. JUGLANS REGIA L. Juglandaceæ.**Walnut.**

From New York State. Cuttings secured by Mr. C. A. Reed, of the Bureau of Plant Industry. Received March 4, 1916. Quoted notes by Mr. Reed.

"The Thomson orchard is owned by Mr. Adelbert Thomson, of Honeoye Falls, Livingston County, N. Y. It consists of 225 trees grown from seed raised in Rochester and planted in 1886 by Mr. Thomson where the trees now stand. After the nuts were planted Mr. Thomson lost interest and allowed the trees to be neglected for some 25 years, during which time they made very slow

growth. In 1913 the orchard yielded from 50 to 75 bushels of nuts, which sold readily at 25 cents a pound. Encouraged by this, Mr. Thomson then broke up the sod and has since been endeavoring to get the orchard well under cultivation. The crop of 1915 amounted to approximately 150 bushels, the nuts readily selling in the Rochester markets at from 20 to 30 cents."

42041. "*Avon*. Thomson orchard, Honeoye Falls, N. Y. Tree B-16. An upright, pyramidal tree of vigorous growth, evidently late in maturing its foliage, standing second in the second row beginning at the corner next to the highway and row of spruce trees. It has a trunk circumference of 41 inches at breast height and a spread of about 25 feet. Its crop of 1915 was fairly heavy, being a bushel and a half or more. The nuts were gathered about October 25. The nuts are rather above medium size, somewhat of the *Mayette* type, though rather more wedge shaped. The most distinctive external feature is perhaps the prominence of the suture at the apical end. The nuts are imperfectly sealed and slightly astringent, but of very good flavor."

42042. "*Livingston*. Thomson orchard, Honeoye Falls, N. Y. Tree C-17. A vigorous, spreading, and symmetrical tree standing first in the third row from the corner, next to the highway and the spruce hedge. Grown from seed obtained from a tree in Rochester and planted in 1886 by Mr. Thomson where the tree now stands. The tree bore a good crop in 1915. The nuts are of good size and form, well sealed, thin shelled, the kernels plump and of good flavor, though somewhat astringent. Height from 28 to 30 feet and circumference at breast height $54\frac{1}{2}$ inches. Maturity, October 10 to 20, 1915."

42043. "*Thomson*. Thomson orchard, Honeoye Falls, N. Y. Tree D-14. A vigorous, symmetrical, low-headed, and late-growing tree in the Thomson orchard, grown from the same lot of seed as B-16 [S. P. I. No. 42041] and C-17 [S. P. I. No. 42042], etc. In 1915 it bore a heavy crop of large nuts which became the favorite of Mr. Thomson's daughter. The nuts are of good size and form, easy to crack, fairly plump meated, of good flavor, but slightly astringent. In 1915 the crop matured from October 10 to 22."

42044. "*Leland*. Thomson orchard, Honeoye Falls, N. Y. Tree L-15. A double but rather small and not overvigorous tree, bearing the largest nuts of any tree in the orchard. The nuts are a little thick shelled, but rounded out in form; the kernels are plump, sweet, but fairly astringent. Height estimated to be 20 feet and circumference of each trunk at breast height $20\frac{1}{2}$ and $21\frac{1}{4}$ inches, respectively. The nuts matured from October 15 to 22, 1915."

42045. "*Holden*. The parent tree of this variety stands on the lawn of Mr. Jacob Cosmon, of Hilton, N. Y., about 2 miles from the village and a slightly greater distance from the shore of Lake Ontario. It has been known by Mr. Cosmon for about 35 years, and he estimated it to be between 50 and 60 years of age. Owing to the fact of its being crowded on three sides by other trees it has never borne heavily, but by Mr. E. B. Holden, a son-in-law of Mr. Cosmon, who is the introducer and in whose honor it has been named, it is reported to bear frequently a bushel or more of nuts. Nuts from this tree have been exhibited at various fairs and fruit shows for some 10 years and repeatedly have been given very high rating. The nuts are above medium size, bright colored, thin shelled, and have plump kernels rich in oil and of sweet flavor. They are, however, somewhat objectionable because of an astringency of pellicle."

42046. ZIZYPHUS JUJUBA Mill. Rhamnaceæ.**Jujube.***(Ziziphus sativa Gaertn.)*

From Shorter, Ala. Presented by Mr. Charles G. Howard. Received March 4, 1916.

"Cuttings obtained from Mr. J. W. Burton, Shorter, Ala."

42047. CYMBOPETALUM PENDULIFLORUM (Dun.) Baill. Annonaceæ.**Sacred ear-flower.**

From Guatemala. Presented by Mr. Stuart K. Lupton, American consul, city of Guatemala. Received March 7, 1916.

"*Sacred ear-flower*, or *orejucla*, as it is locally known. These petals and seeds were obtained through the kindness of Mr. R. S. Anderson, an American resident in Coban, Guatemala. In his letter he says, 'I am sorry to say we have not been able to find the seed. The owners of the trees or tree say the birds eat the seed, so they are hard to get.' " (*Lupton.*)

42048. CYMBOPOGON COLORATUS (Hook.) Stapf. Poaceæ.**Lemon grass.**

From Suva, Fiji Islands. Presented by Mr. C. H. Knowles, Superintendent of Agriculture. Received February 21, 1916.

"This species is not now in commercial use. It seems proved that it will produce oil not inferior to that of *Cymbopogon citratus*, the lemon oil of commerce. Lemon oil is used in America in the preparation of ionone, or artificial violet, for perfuming soap and also in the preparation of furniture polish; in India it is used in domestic medicine and as a kitchen herb in sauces and curries." (*Chase.*)

42049 to 42051.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received February 29, 1916.

42049. PHASEOLUS VULGARIS L. Fabaceæ.

"Forma *tawana*. The *taguana*, or giant bean of the Guaranis, which is only a form of the common bean, is perhaps the typical form from which the bean arose. But if it is botanically only a form, from the agricultural point of view it is more than a variety. This bean has been cultivated by the Guaranis certainly since a remote antiquity. The most notable peculiarity of this variety is its enormous growth. It has a long shoot, which grows to 15 or 20 meters, so that in a wood it climbs to the tops of high trees. Cultivated without branching, it develops less but yet produces abundantly, the production keeping step with the development, so that a well-developed plant will produce up to 10 kilos of clean seed." (*Bertoni, Agronomia, vol. 5, pp. 326-327. 1913.*)

42050 and 42051. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(*Pachyrhizus angulatus* Rich.)

See S. P. I. No. 41712 for previous introduction and description.

42052 to 42054. DIOSCOREA spp. Dioscoreaceæ.

From Cristobal, Canal Zone. Tubers presented by Mr. O. W. Barrett. Received March 2, 1916.

42052 to 42054—Continued.

42052. *Dioscorea* sp.

Manawá yam.

"A very peculiar yam which appears to be distinct from the white yampee, the *Mapues* yampee of Porto Rico, or any of the wild sorts I have ever seen. We are calling it the *Manawá* yam, from the plantation where I am trying it near Colon. About nine months ago I obtained two small roots from a Panaman, who admitted they were not commonly cultivated even in Panama. They may be native to the Darien region. From one hill (planted in April, I believe), we harvested some 6 or 8 pounds in November, and the vines are still (December 24) producing. It is a heavy yielder and two or three months earlier than the *Dioscorea alata* or *D. sativa* types. It is slightly sweet and has a flavor all its own, and practically no rag. The size and shape impress me strongly. The skin is of a distinct type, potatolike. This, with the attractive shape, individual size, and mealiness, will, I believe, make the *Manawá* very popular." (*Barrett.*)

"When baked the skin is bitter and can not be eaten." (*R. A. Young.*)

See S. P. I. No. 39705 for previous introduction.

For illustrations of yams, see Plates III and IV.

42053. *Dioscorea trifida* L. f. *Dioscoreaceæ*.

White yampee.

"From Bracho plantation, near Colon. Second crop. Probably *Dioscorea trifida*." (*Barrett.*)

"The quality is excellent, the flesh being white and mealy." (*R. A. Young.*)

For an illustration of the tubers of the white yampee, see Plate V.

42054. *Dioscorea* sp. *Dioscoreaceæ*.

Yampee.

"From Bracho plantation, near Colon. Second crop." (*Barrett.*)

"The quality is fair; the flesh is very slightly pink and is rather firm." (*R. A. Young.*)

The tubers of this introduction were received mixed with those of the *white yampee*, S. P. I. No. 42053, but on account of the marked difference in appearance and quality they were separated and given different numbers.

For an illustration of this form of yampee, see Plate VI.

42055 and 42056.

From Joinville, Brazil. Presented by Mr. Jean Knatz. Received March 3, 1916.

42055. *Carica papaya* L. *Papayaceæ*.

Papaya.

A rapid-growing fruit tree, reaching a height of 25 feet in 10 months and bearing numerous melon-shaped fruits on the trunk. Good varieties are deliciously sweet, with a characteristic flavor. They are relished as a breakfast fruit and are easily digested, as they contain a powerful papain ferment.

42056. *Phaseolus calcaratus* Roxb. *Fabaceæ*.

Rice bean.

"The plant is strictly an annual and half twining in habit. Planted in rows the different varieties grow 12 to 30 inches high and produce vining branches 3 to 6 feet long. The leaves closely resemble those of the common bean, but not infrequently are three lobed. The flowers are bright yellow, produced in racemes of 10 to 20. The pods are smooth,



THE DAGO HAYA, THE BEST TROPICAL YAM, FROM THE ISLAND OF GUAM, GROWING AT MIAMI, FLA. (*DIOSCOREA ALATA* L., S. P. I. No. 39705.)

The true yams constitute an important group of starchy tuberous-rooted food plants and should not be confused with certain varieties of sweet potatoes that are called yams in our Southern States. They should be grown and used largely in those warm regions of the world where they will thrive and into which people demanding white potatoes have to import them from cooler regions. In the island of Trinidad the production of the yam, cassava, taro, and other starchy root crops has been so increased during the war that the necessary demands on the wheat supply of the world and on transportation for carrying flour and potatoes to that island have been materially reduced. (Photographed by Edward Simmonds, October 20, 1916; P20115FS.)



THE MANAWA YAM, FROM THE REPUBLIC OF PANAMA. (DIOSCOREA SP., S. P. I. No. 42052.)

The mealy whiteness of the flesh when cooked, the smoothness of the skin, and the shape and size of this yam make it an extremely desirable variety for table use. The first introduction did not succeed at the place where tested, but the unusually attractive appearance and excellent qualities of this variety make it worthy of the extensive trials in Florida which are now contemplated. (Photographed, natural size, by E. L. Crandall, January 17, 1916; P19425FS.)



TUBERS OF THE WHITE YAMPEE, A VARIETY OF YAM GROWN IN THE CANAL ZONE. (*DIOSCOREA TRIFIDA* L. F., S. P. I. No. 42053.)

This yampee is of fine quality and will furnish the South with another food equal to the best potatoes if it can be grown there successfully. When baked or when peeled and boiled it resembles a mealy potato and approximates it in food value, though slightly lower in protein. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19482FS.)



ANOTHER FORM OF YAMPEE, FROM THE CANAL ZONE. (DIOSCOREA SP., S. P. I. No. 42054.)

The superior keeping quality in the Tropics of the true yam as compared with the cassava or the sweet potato is a very important factor. These tubers were reported to be of the same variety as those shown in Plate V, though, as will be seen, they are very different in appearance. They illustrate the fact that this important group of food plants deserves more serious consideration from horticulturists than it has hitherto received. (Photographed, natural size, by E. L. Crandall, March 2, 1916; P19481FS.)

42055 and 42056—Continued.

slender, falcate, straw colored, brownish or blackish, 3 to 4 inches long, and burst open readily at maturity. Though very productive of seed, the vining habit of the plant, as well as the shattering, makes it difficult to harvest." (C. V. Piper, *Bulletin of the U. S. Department of Agriculture*, No. 119, p. 13.) For further information this bulletin should be consulted.

See S. P. I. Nos. 33098 and 38441 for previous introductions.

42057. *PRUNUS BOKHARIENSIS* Royle. Amygdalaceæ. Plum.

From Simla, Punjab, India. Presented by Mr. E. Long, superintendent, Viceregal Gardens. Received March 7, 1916.

"Commonly known as *Alloobokhara*." (Long.)

Seeds sent in reply to the following request: "We are inclosing a photograph of a specimen of *Prunus* in the Kew Herbarium, England, which came originally from Simla, India. This was labeled *Prunus bokhariensis*, but we do not know for certain if this is authentic. It seems to have more than one common name and is known as *Alucha* and *Aru bokhara*. It was found at Simla apparently in what is there known as the Annandale Garden and is therefore known as the *Annandale plum*. It is also growing in the Service Club Compound at Simla and in the Kakheri Compound. This plum somewhat resembles *Prunus triflora* (*P. salicina*), but we believe it to be a distinct species, and it appears to be of much value in breeding work."

42058 to 42065.

From Keijo, Chosen (Korea). Presented by Miss Katherine Wambold. Received February 28, 1916. Descriptive notes by Miss Wambold.

42058. *CHAETOCHELOA ITALICA* (L.) Scribn. Poaceæ. Millet.
(*Setaria italica* Beauv.)

"*Chō*, ground and made into *dok*, solid dumpling, coarser dumpling, or cooked as *pop*, that is, as rice is cooked."

42059. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.

"*Kong*. Cooked, pressed, hung all winter to rafters, then soaked in a brown liquid called *chang*, used as a salty sauce on food. It is parched and then eaten. A few partly cooked grains are often scattered in the rice, as we use raisins in a rice pudding."

42060. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"*Soo soo*. Ground and made into flour for *dok*, a solid bread like a fallen dumpling; also cooked as *pop*, boiled rice."

42061. *HORDEUM VULGARE COELESTE* L. Poaceæ. Barley.

"*Po ree*, cooked as rice is cooked; parched and made into coffee; ground into flour and made into *yot*, looking like molasses candy; sprouted and ground, mixed with rice, to make *comju*, a sort of rice soup."

42062. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ. Perilla.
(*Perilla ocymoides* L.)

"*Tui gai*. Oil is extracted from the seeds and used on the paper which covers the mud floors. It is used also on skin shoes."

42063. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ. Adzuki bean.

"*Pat*. Used for flour and made into *dawk* (*dok*), a substance like a solid dumpling; also as porridge."

42058 to 42065—Continued.

42064. *PIHASEOLUS AUREUS* Roxb. Fabaceæ.

Mung bean.

"*Nok too*. Ground and made into *mook*, a blancmange; also cooked as a vegetable."

42065. *TRITICUM AESTIVUM* L. Poaceæ.

Wheat.

(*Triticum vulgare* Vill.)

"*Meal* is the Korean name. Made into flour used for *dok*, a substance like fallen dumpling; also for *cooksoo*, i. e., vermicelli."

42066. *BAMBOS GUADUA* Humb. and Bonpl. Poaceæ.

Guadua.

(*Guadua angustifolia* Kunth.)

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni.
Received February 2, 1916.

"In connection with *guaduas* I must notice the *guadua* itself, the most indispensable plant of all New Granada after the plantain, the cane, and maize. It might be called the lumber tree, for it supplies all our fencing (except walls of brick, rammed earth, and rarely of stone), also the woodwork of most houses, and whatever is made of boards at the North. It is an enormous grass, like the bamboo of the eastern Tropics, growing, however, to a less height, only 30 to 40 feet. The slender foliage is of inconceivable beauty, comparing with that of other trees as ostrich feathers do with goose quills. The stem is about 6 inches in diameter, with joints about 20 inches apart. The thickness of the wood is nearly an inch. When poles or slats are wanted, the stem is split into four, six, or eight parts. For boards for the top of a coarse table, bench, or bedstead, it is opened and flattened out, splitting almost at every inch of width, but not coming entirely apart. For a dish, candle case, grease pot, or extemporaneous vessel for carrying drink to a company of hunters or laborers, it is cut off just below the partition. Such a receptacle is called a 'tarro.' Tarros of double capacity are made for bringing the domestic supply of water for a family by taking a piece two joints long, with a septum at each end and one in the middle. A hole is made in the upper and middle septa, and if they be used for carrying molasses a bung can be put in or an orange used for a stopper. Bottles of a single joint are used for holding castor oil, etc. In short, the uses of the *guadua* are innumerable. The *guadua* starts from the ground with the full diameter, or nearly so, but the joints are at first very short. Some trees send out branches, and they are long, straggling, and terribly thorny. Others grow with a diameter of only 2 inches and make good poles for bringing down oranges, every one of which has to be torn from the tree, or it decays without falling. The cavities of the *guadua* often contain water. It is erroneously believed that the quantity increases and diminishes with the phases of the moon. I must state one other thing about the *guadua* which is unusual in the vegetable kingdom here, but very common at the North. It is apt to take entire possession of the ground on which it grows. Now a square mile covered with the same species, say a pine, an oak, or the beech, an acre covered with the same species of grass, or whortleberry, or other plant is no uncommon thing at the North, but in the Tropics it is quite different. Plants are not gregarious here, still less exclusive. I have seen the guava grow in natural orchards where most of the trees in a considerable space were *Psidium*, but even this is rare, and in general you can not expect, where you have found a plant you want, to find others of the same species near it. If I wish to find a second lime tree, for instance, it is of no more use to look in the neighborhood where I found the first than in any other. But a 'guadual' is

a considerable space, almost always near a stream, where scarce the smallest intruding plant is permitted. The *guadua* might be cultivated to great profit, but I never knew of but one attempt at it. The flower and seed are so rare that few botanists have ever seen it." (*Holton, New Granada*, pp. 109, 110.)

42067. CERCIDIPHYLLUM JAPONICUM Sieb. and Zucc. Trochodendraceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received February 7, 1916.

"A deciduous tree of the largest size, often 100 feet high in its native state, with pendulous branches and a spirally twisted furrowed trunk. The trunk is sometimes solitary and 3 to 4 feet through, but more often the tree is made up of a group of several smaller stems. Leaves broadly ovate or heart shaped, 2 to 4 inches long. The male and female flowers are borne on separate trees, but neither possesses any beauty. This tree for a long time was thought to be confined to Japan, where it is the largest of deciduous trees, reaching its finest development in the island of Yezo; but Wilson found it in China in 1910. One tree, still living, but with its top fallen away, he found to be 55 feet in girth of trunk. The timber is light, straight grained, and yellowish, and is highly valued. The finest trees I have seen in Europe are in the Imperial Garden at Sans Souci, near Berlin, where there was, in 1908, a singularly elegant tree 30 feet high, with slender, spreading, arching branches. It succeeds equally well in the Royal Garden at Hanover. Still finer trees, but of denser habit, are in the Arnold Arboretum, Massachusetts, and in Mr. Thayer's grounds at Lancaster in the same State. It evidently needs a continental climate. At Kew, where it was introduced in 1881, it still remains a mere shrub. The generic name refers to the resemblance of the leaves to those of the Judas tree (*Cercis*)." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 332.)

42068. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From New Orleans, La. Presented by the J. Steckler Seed Company. Received February 26, 1916.

Round, green.

42069. LUFFA ACUTANGULA (L.) Roxb. Cucurbitaceæ. Loofah gourd.

Secured by Mr. Frank N. Meyer, of the Bureau of Plant Industry, from Mr. Moy Auk, Kenilworth Avenue, Washington, D. C., March 9, 1916.

"A very good vegetable, much liked by the Chinese."

"This is a much smaller and apparently earlier variety than we have in the South." (*D. N. Shoemaker*.)

42070 and 42071. CAPSICUM ANNUUM L. Solanaceæ. Red pepper.

From State College, N. Mex. Presented by Mr. Fabian Garcia, New Mexico College of Agriculture and Mechanic Arts. Received March 7, 1916.

42070. "No. 9. This strain is proving to be more early and prolific and has a more shapely pod than the other strains." (*Garcia*.)

42071. "No. 11. This strain is almost as good as No. 9 [S. P. I. No. 42070], but it is not quite as prolific." (*Garcia*.)

42072. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.**Strawberry.**

From Chile. Presented by Mr. Thomas W. Voetter, American consul, Antofagasta, who received these seeds from the American consular agent at Arica. Received March 8, 1916.

"These seeds were collected by Mr. H. A. P. Schumacher, of Tacna, at Pistala in the Department of Tarata, Province of Tacna, Chile, located 70° 6' W. and 17° 28' S., at 2,843 meters (about 9,470 feet) elevation above sea level. The plants are grown by Indians (a mixture of Peruvians and Bolivians), and the fruit is of medium size and of light red-brown color, ripening in November." (Voetter.)

42073. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received February 18, 1916.

Var. *chilnango*.

42074. CAPSICUM ANNUUM L. Solanaceæ.**Red pepper.**

From Barcelona, Spain. Presented by Mr. Carl Bailey Hurst, American consul general. Received March 7, 1916.

"Spanish sweet pepper known to Spanish agriculture and industry as *Pimento dulce morrón*. This seed was obtained especially for this consulate general from the region in this consular district where these peppers are most largely grown. It is said to be of the highest quality." (Hurst.)

42075. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

From Buitenzorg, Java. Presented by the Department of Agriculture. Received March 8, 1916.

42076 to 42080. LATHYRUS spp. Fabaceæ.

From Utrecht, Netherlands. Presented by the director, Botanic Garden. Received February 2, 1916.

42076. LATHYRUS LATIFOLIUS L.**Everlasting pea.**

"This is the common perennial pea and one of the hardiest and most easily cultivated species, thriving almost anywhere, even among flags and boulders. A rampant grower, it is a good trellis plant, and is adapted as a cover to wild, rough places, as a rock garden, where it scrambles over bushes and stones. It succeeds in shade and grows rapidly, but, like all species of *Lathyrus*, it is impatient of removal, owing to the size and length of its roots. It is not fragrant. Its varieties are not clearly defined." (Bailey, *Standard Cyclopedia of Horticulture*, vol. 4, p. 1825.)

See S. P. I. Nos. 17772 and 28480 for previous introductions.

42077. LATHYRUS ODORATUS L.**Sweet pea.**

See S. P. I. Nos. 13306 to 13312 and 17774 for previous introductions.

42078. LATHYRUS SYLVESTRIS L.**Flat pea.**

"Inferior ornamentally to other perennials; sometimes mentioned as a forage plant and for plowing under in a green state as a fertilizer. Grows well on poor, unimproved sandy soil and is unaffected by frosts and droughts. For garden cultivation it may be sown in a seed bed and

42076 to 42080—Continued.

transplanted when of suitable size. Its seeds in the wild state are said to be to some degree unhealthful, but in the cultivated form this quality has been bred out." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1825.*)

See S. P. I. Nos. 32415 and 40672 for previous introductions.

42079. LATHYRUS SYLVESTRIS L.**Flat pea.**

"Var. *wagneri*." This so-called variety, claimed to have been produced by a German named Wagner, seems not to be different from the ordinary *Lathyrus sylvestris*.

See previous introduction [S. P. I. No. 42078] for description.

42080. LATHYRUS VERNUS (L.) Bernh.**Spring vetchling.**

"A compact, tufted plant, growing quickly in the sun or a little shade; best in deep, sandy loam, in a sheltered position; hardy." (*Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1827.*)

See S. P. I. Nos. 22555 and 40322 for previous introductions.

42081. MALUS BACCATA (L.) Moench. Malaceæ.*(Pyrus baccata L.)***Siberian crab apple.**

From Castlecomer, Ireland. Cuttings presented by Mr. I. Proctor, Ballyhemon House. Received March 20, 1916.

"A fine variety of Siberian crab which produces fruit from 1½ to 2 inches long and from one-half to three-fourths of an inch in diameter." (*A. L. T. Proctor, in letter of February 7, 1916.*)

42082. PUYA CHILENSIS Molina. Bromeliaceæ.**Puya.**

From Lima, Peru. Presented by Dr. A. Weberbauer. Received March 13, 1916.

"Seeds of one of the most interesting plants of the Peruvian Cordilleras, namely, of the giant bromeliad. I collected the seed at Capaya, Department of Apurimac, Province of Aymaraes, at an elevation of 4,000 to 4,100 meters above sea level in a region where frosts and snowfalls are abundant. The plant should, therefore, perhaps not be cultivated in a greenhouse, but requires only protection against sharp frosts and must naturally receive much light. In the vicinity of Capaya the plant is called *titanca*. Heretofore I have known this plant only from the Cordilleras between 9° and 10° south and have described and figured it in my book, *Die Pflanzenwelt der Peruanischen Anden*." (*Weberbauer.*)

"This is one of the most striking of our bromeliaceous plants, cultivated in a cool stove of the Royal Gardens, Kew. The stem, or caudex, has now attained a height of 4 feet, independent of the leaves, which are from 3 to 4 feet in length, spreading in all directions, the lower ones being reflexed. These leaves would render the plant admirably suited to the formation of fences, in the nature of the spinous margins; for the upper half of the leaf has all the spines directed forward towards the apex, presenting a great obstacle to intrusion of man or beast in that direction, whilst those lower down the leaf (longer and stronger, too) have their curvature downwards, so that if man or animal is so bold as to make his way partially through, the decurved spines would prevent his retracing his steps with impunity. The compound spike of flowers upon the columnlike, perfectly straight peduncle is remarkable for

its size, the large dull yellow (but inclining to green) flowers and the copious bracteas turning brown or black in age. This plant is called *Cardon* and *Puya* in Chile, where the soft substance of the stem is used for corks and bungs; the flowers yield a remedy for hernia, and the Indians use the spines of the leaves for fishhooks." (*Curtis's Botanical Magazine*, vol. 9, pl. 4715.)

42083. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ. **Perilla.**
(*Perilla ocymoides* L.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company.
Received March 13, 1916.

See S. P. I. No. 42062 for previous introduction and description.

42084. *ARALIA CORDATA* Thunb. Araliaceæ. **Udo.**

From Yokohama, Japan. Roots purchased from L. Boehmer & Co. Received March 13, 1916.

"Japanese *Nakate White*, from Kanagawa Ken." (*Boehmer & Co.*)

42085. *GARCINIA EPUNCTATA* Stapf. Clusiaceæ.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received March 15, 1916.

"A wild fruit which grows on very large trees, 20 to 30 feet high." (*Stewart.*)

42086. *NEPHELIUM LAPPACEUM* L. Sapindaceæ. **Rambutan.**

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 15, 1916.

"*Ramboetan atjeh matjan*. A tree up to 25 meters high. A fruiting tree which is an ornament of the Javanese village groves because of the pretty, often more or less dense, leaf crown, decorated on the outside with the numerous, long-stemmed scarlet fruits the size of a hen's egg. Arillus white, very juicy, more or less sour." (*Koorders and Valeton, Boomsoorten van Java.*)

"One of the most delicious and showy fruits of the Dutch East Indies, closely related to the litchi." (*Fairchild.*)

See S. P. I. Nos. 13571, 17515, and 34494 for previous introductions with descriptions.

42087 to 42136.

From Melbourne, Victoria, Australia. Presented by Mr. A. E. V. Richardson, agricultural superintendent, Department of Agriculture. Received March 8, 1916. Notes by Mr. Richardson.

42087. *AVENA ORIENTALIS* Schreb. Poaceæ.
Black Tartarian.

Oats.

- 42088 and 42089. *AVENA SATIVA* L. Poaceæ.

Oats.

42088. "*Ruakura* oats raised in New Zealand by Primrose McConnell and having the reputation of being rust resistant."

42089. "*Clydesdale.*"

- 42090 and 42091. *AVENA STERILIS* L. Poaceæ.

42090. "*Algerian.*"

Oats.

42091. "*Calcutta.*"

42087 to 42136—Continued.

42092 to 42101. *HORDEUM* spp. Poaceæ.

Barley.

42092 to 42095. *HORDEUM DISTICHON PALMELLA* Harlan.42092. Subvariety *erectum*. "*Goldthorpe*. Feed barley."42093 to 42095. Subvariety *nutans*.42093. "*Pryor*. Two-rowed malting barley."42094. "*Kinver*. Two-rowed malting barley."42095. "*Archer*. Two-rowed malting barley."42096. *HORDEUM VULGARE PALLIDUM* Seringe.

Subvariety *coerulescens*. "*Roseworthy Oregon*. Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42097. *HORDEUM DISTICHON PALMELLA* Harlan.Subvariety *nutans*. "*Golden grain*. Two-rowed malting barley."42098. *HORDEUM VULGARE* L.

"*Square head*. Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia."

42099 and 42100. *HORDEUM VULGARE PALLIDUM* Seringe.

42099. Subvariety *coerulescens*. "*Short head*. Six-rowed field barley produced by Prof. Perkins, of Roseworthy College, South Australia."

42100. Subvariety *coerulescens*. "*Cape*. Two-rowed malting barley."

42101. *HORDEUM VULGARE TRIFURCATUM* (Schlecht.) Beaven."*Skinless*. Feed barley."42102 to 42136. *TRITICUM* spp. Poaceæ.

Wheat.

"Nos. 42102, 42105 to 42109, 42111 to 42114, 42131, and 42134 are new crossbred varieties which are largely grown in the various States of the Commonwealth. Of very high milling value, and produce flour possessing a very high water-absorption value and give well-piled loaves. The rest are, for the most part, selections isolated by various plant breeders and agriculturists from acclimatized foreign varieties, and from old types of wheat that have been growing in the States for some forty years."

42102 to 42114. *TRITICUM AESTIVUM* L.(*Triticum vulgare* Vill.)42102. *Federation*.42103. *Federation* (hard selection).42104. *Federation* (white selection).42105. *Currawa*.42110. *Crossbred 28*.42106. *Commonwealth*.42111. *Florence*.42107. *Major*.42112. *Cedar*.42108. *Nardoo*.42113. *Bob's*.42109. *Canberra*.42114. *Comeback*.42115. *TRITICUM DURUM* Desf.*Huguenot*.

42087 to 42136—Continued.

42116 to 42136. *TRITICUM AESTIVUM* L.
(*Triticum vulgare* Vill.)

42116. Penny.	42127. Purple Straw.
42117. Warden.	42128. College Purple Straw.
42118. Marshall's No. 3.	42129. Gluyas (bearded).
42119. Dart's Imperial.	42130. Gamma.
42120. Yandilla King.	42131. Bayah.
42121. College Eclipse.	42132. Viking.
42122. Correll's No. 3.	42133. White Tuscan.
42123. Avoca.	42134. Zealand Blue.
42124. Wallace.	42135. Bunyip.
42125. Triumph.	42136. Furbank.
42126. Thew.	

42137. *ARRACACIA XANTHORRHIZA* Bancroft. *Apiaceæ*. **Arracacha.**

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, Hope Gardens. Received March 23, 1916.

"This common vegetable is a native of the Andes in South America, where it is cultivated between 5,000 and 7,000 feet altitude. It is a low parsniplike plant, producing large edible starchy carrot-shaped roots, the flavour of which has been compared to a combination of parsnip and potato. The plant will thrive in any good soil and is adapted only to the higher elevations, say from 4,500 to 6,000 feet. It is commonly cultivated as a vegetable at Bogota in Colombia up to 8,000 feet elevation." (*H. F. MacMillan, Handbook of Tropical Gardening, 2d ed., p. 234, 1914.*)

42138 to 42165. *DIOSPYROS KAKI* L. f. *Diospyraceæ*. **Kaki.**

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, Government Horticultural Experiment Station. Received March 8, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

- 42138. "No. 28. *Marugaki*. Astringent. Hiroshima Province."
- 42139. "No. 29. *Giombo*. Astringent. Hiroshima Province."
- 42140. "No. 30. *Shimofuri*. Astringent. Hiroshima Province."
- 42141. "No. 31. *Koharu*. Sweet. Kumamoto Province."
- 42142. "No. 34. *Yotsu-myotan*. Sweet. Hiyogo Province."
- 42143. "No. 35. *Koharu*. Sweet. Oita Province."
- 42144. "No. 39. *Takura* (or *Sakushu-mishirazu*). Astringent. Oita Province."
- 42145. "No. 40. *Kumono*. Astringent. Okidzu Province."
- 42146. "No. 41. *Kiara*. Sweet. Okidzu Province."
- 42147. "No. 42. *Fuji*. Astringent. Okidzu Province."
- 42148. "No. 43. *Mishirazu*. Astringent. Okidzu Province."
- 42149. "No. 44. *Ama-yemon*. Sweet. Okidzu Province."
- 42150. "No. 45. *Koshu-hiyakume*. Astringent. Okidzu Province."
- 42151. "No. 46. *Yotsumizo*. Astringent. Okidzu Province."
- 42152. "No. 47. *Dojo-hachiya*. Astringent. Okidzu Province."
- 42153. "No. 48. *Tokuda-gosho*. Sweet. Okidzu Province."
- 42154. "No. 49. *Shiroto-damashi*. Astringent. Okidzu Province."

42138 to 42165—Continued.

42155. "No. 50. *Jiro*. Sweet. Okidzu Province."
 42156. "No. 51. *Inayama*. Astringent. Okidzu Province."
 42157. "No. 52. *Shiyogatsu*. Sweet. Okidzu Province."
 42158. "No. 53. *Shimofuri*. Sweet. Okidzu Province."
 42159. "No. 54. *Sanenashi*. Astringent. Okidzu Province."
 42160. "No. 55. *Ama-hiyakume*. Sweet. Okidzu Province."
 42161. "No. 56. *Ye-gosho*. Sweet. Okidzu Province."
 42162. "No. 57. *Yashima*. Sweet. Okidzu Province."
 42163. "No. 58. *Onihira*. Astringent. Okidzu Province."
 42164. "No. 59. *Shiunshio*. Sweet. Okidzu Province."
 42165. "No. 60. *Fuyu*. Sweet. Okidzu Province."

42166 and 42167.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. L. H. Dewey, of the Bureau of Plant Industry. Received March 18, 1916.

42166. *CANNABIS SATIVA* L. Moraceæ.

Hemp.

"*Tochigi* hemp. The seed supply for sowing is very limited because farmers do not cultivate beyond their own local requirements, so unless contracted for early in the season no considerable quantity is obtainable. The best and most durable fishing nets are made of the *Tochigi* hemp, which are said to last for three years, while nets made of hemp produced elsewhere do not keep good half as long. The net manufacturer of Fujisawa, who supplies the nets all over Japan, uses the *Tochigi* hemp exclusively, and his make is esteemed as the very best in Japan. As to the length of fiber, it may depend upon the cultural method. For hemp production the seeds are sown broadcast and grown closely together, to make the stalks grow slender and higher. The stalks are gathered while they are quite green. For seedlings ample space is provided in order that they may spread out branches freely, and they are left in the field till the seed matures." (*S. Iida*.)

"*Tochigi* (pronounced to-ching'ee) hemp is regarded as the best fiber-producing hemp in Japan. It is cultivated most extensively in the Province of *Tochigi*, about 100 miles north of Yokohama. The slender tall stalks produce a fiber somewhat finer than the average Kentucky hemp. Although this is one of the most promising strains of foreign hems it is not likely to give very satisfactory results in this country until after it has been acclimated by cultivation and selection for two or three generations." (*L. H. Dewey*.)

42167. *ZEA MAYS* L. Poaceæ.

Corn.

Introduced for breeding experiments.

42168 to 42172. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ. Chayote.
 (*Sechium edule* Swartz.)

From Basse-Terre, Guadeloupe, French West Indies. Presented by Mr. Joseph O. Florandin, American vice consul. Received March 20, 1916

Introduced for the office experiments.

42168. White.

42171. Long light green.

42169. Large dark green.

42172. Small dark green.

42170. Large light green.

42173 to 42176. INDIGOFERA spp. Fabaceæ.**Indigo.**

From Buitenzorg, Java. Presented by the director, Department of Agriculture. Received March 15, 1916.

42173. INDIGOFERA HIRSUTA L.

An annual species of indigo, native of Guinea, less esteemed for dye production than *Indigofera anil* L. and *I. tinctoria* L.

See S. P. I. Nos. 23726 and 37068 for previous introductions.

42174. INDIGOFERA LONGERACEMOSA Boivin.

In Madagascar and Zanzibar this species, which is very distinct from both *Indigofera tinctoria* and *I. sumatrana*, is valued by the people beyond all the other species they grow, and they grow the following: (a) Chiefly *I. anil*, (b) less often *I. tinctoria*, (c) occasionally *I. sumatrana*, and (d), in the highlands of Madagascar, *I. arrecta*. (Adapted from Watt, *The Commercial Products of India*, p. 662.)

42175. INDIGOFERA SUFFRUTICOSA Mill.

A South American species cultivated in Burma, Indo-China, southern China, and Java.

See S. P. I. Nos. 24440 and 37391 for previous introductions.

42176. INDIGOFERA SUMATRANA Gaertn.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies and is the *I. tinctoria* of Lunan. If, therefore, it be deemed necessary to give this plant a separate name and remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from Watt, *The Commercial Products of India*, pp. 662-663.)

42177 and 42178.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received March 17, 1916.

42177. PITTOSPORUM FAIRCHILDI Cheeseman. Pittosporaceæ.

"This variety bears a striking resemblance to *Pittosporum crassifolium* [S. P. I. No. 41290], but is the more dense of the two, consequently better; it ripens its seed several months later; makes a splendid hedge and is good also as a shrub tree; height about 20 feet. This variety was discovered by the late Capt. Fairchild, on an island off the New Zealand coast. The seeds take a long time to germinate, and forcing them is of no use. Plants are tender when young and must be kept from frost; they are hardy when established." (Wright.)

42178. AMYGDALUS PERSICA L. Amygdalaceæ.
(*Prunus persica* Stokes.)**Peach.**

"Weeping variety which will repeat from seed; best results obtained by budding them on standards, or they may be worked on low stocks; tie the bud up to a tall stake and top off at a given height. It is a very fine dessert peach." (Wright.)

42179. PLATANUS ORIENTALIS L. Platanaceæ. Oriental plane tree.

From Lahore, India. Presented by the superintendent, Government Agri-Horticultural Gardens. Received March 17, 1916.

"A deciduous tree of the largest size, in this country occasionally 80 to 100 feet high and 14 to 20 feet in girth of trunk. Native of southeastern Europe and Asia Minor; cultivated in England in the middle of the sixteenth century. The true oriental plane is comparatively rare in gardens, having been ousted by the more rapidly growing London plane, which is not so picturesque nor so pleasing as an isolated lawn tree. It is easily distinguished from *acerifolia* by its shorter, more rugged trunk and its deeper, often doubly lobed leaves. Few trees are longer lived than this. On the banks of the Bosphorus there is a group of trees under which the knights of Godfrey de Bouillon on their way to the crusades are said to have been sheltered in 1096. Under a tree still living on the island of Cos in the Aegean Sea, its trunk 18 yards in circumference, tradition says that Hippocrates sat more than 400 years B. C. There is no direct evidence to support these stories, but they point to the perhaps unequalled longevity of the plane among European trees. In his account of fine British specimens Mr. Elwes gives first place to one in the palace gardens at Ely, planted by Bishop Gunning between 1674 and 1678. It is over 100 feet high and more than 20 feet in girth. A fine specimen at Kew, near the sundial and on the site of the famous seventeenth-century gardens of Sir Henry Capel of Kew House, has a trunk 15 feet in girth." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 203.)

42180. BARYXYLUM DUBIUM (Spreng.) Pierre. Cæsalpiniaceæ.

(*Peltophorum vogelianum* Walp.)

From Davie, Fla. Presented by Mr. Robert Werner, horticulturist, Davie Board of Trade. Received March 20, 1916.

Seeds of a large tree 50 to 60 feet high, broad and spreading, giving fine shade. A handsome ornamental tree. Flowers bright yellow with golden yellow anthers. Called *cana fistula* in Brazil, but this name properly belongs to another plant.

See S. P. I. No. 37901 for description.

42181 and 42182.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received March 18, 1916.

42181. INDIGOFERA TINCTORIA L. Fabaceæ.

Indigo.

"A blue dye is obtained from species of *Indigofera*, chiefly *Indigofera anil* (of the West Indies) and *I. tinctoria* (of India and Africa). Both are shrubby plants of the leguminous family and occur in a wild state in Ceylon up to about 2,000 feet. India and Java are almost the only indigo-producing countries. Owing partly to the unhealthiness of the operations in connection with its production, but chiefly to the introduction of synthetic indigo, the cultivation of the plant has in recent years been largely abandoned. Of late, however, the industry appears to have somewhat recovered, the natural indigo being preferred by many manufacturers to the artificial production. The best conditions for the profitable cultivation of the plant are a rich loamy soil with a free sub-soil and a moist hot atmosphere; a temperature below 60° F. is unfavorable to the crop. The land being plowed and harrowed, the seed is sown in lines about 2 feet apart. The seed being small, 10 to 15 pounds

42181 and 42182—Continued.

is required to sow an acre. It germinates in three or four days, and about three months later the flowers appear, when the plants are ready for harvesting. The plants are usually cut down to within a few inches of the ground, tied up in bundles, and carried fresh to the factory. The stumps left in the ground will afterwards 'ratoon,' and two to four cuttings may be obtained from the same roots within the year. To produce the dye the whole plant is subjected to a process of fermentation and churning. The freshly cut bundles are placed in huge vats provided with a tap at the bottom; the top is weighted down with planks and water laid on so as to cover the whole. Fermentation sets in and is allowed to go on for 12 to 16 hours, being stopped when the leaves become a pale color. The liquid is run off by the tap into a second cistern and is kept constantly agitated by either wading coolies, who beat with paddles, or by a mechanical contrivance, for two or three hours, after which the indigo settles in the bottom in the form of bluish mud. This, after draining off the water, is put into bags which are hung to dry, being afterwards cut into squares and stamped and further dried for export. About 8 pounds of leaves will yield one-half ounce of indigo. Good cultivation yields an annual return of from 300 to 500 pounds of indigo per acre." (*MacMillan, Handbook of Tropical Gardening and Planting*, pp. 450 and 451.)

42182. *ISATIS TINCTORIA* L. Brassicaceæ.

Woad.

"*Isatis tinctoria*, the dyer's woad, is said to have been originally a native of southeastern Europe, from whence it has spread by means of cultivation and become naturalised in most parts of Europe as far north as Sweden, and also in some parts of Asia. It is a biennial, growing from 18 inches to 3 or 4 feet high, with a smooth straight stem, branches toward the top, the root leaves stalked, inversely egg shaped or oblong, and coarsely toothed, the upper ones narrow lance shaped, with prominent auricles at the base. The pods are rather more than half an inch long, broad, and very blunt at the top, but tapering to the base. Before the use of indigo became common among European dyers, the blue coloring matter called woad, obtained from this plant, was an article of great importance, and the plant was extensively cultivated; but the introduction of indigo has almost entirely superseded it, and it is now only grown to a limited extent and used chiefly by woolen dyers for mixing with indigo, in order to excite fermentation. It is generally prepared by grinding the leaves into paste, which is then carefully fermented in heaps and afterwards made into balls or bricks for sale. The use of woad as a dye dates from very early times. Dioscorides, Pliny, and others mention its use for dyeing wool; and Cæsar relates that the ancient Britons used it for staining their bodies, the word Britain being derived from the Celtic *brith* or *brit*, 'painted,' in reference to this custom." (*Lindley, Treasury of Botany*, vol. 1, p. 628.)

42183 to 42199.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received March 20, 1916.

42183. *ADENOCARPUS FOLIOLOSUS* (Dryand.) DC. Fabaceæ.

"The stalks in this species are thickly covered with small leaves, which give the whole plant an outré appearance; hence the name '*foliolosus*,'

42183 to 42199—Continued.

so happily hit off; many other peculiarities attend this charming shrub, of which its long deciduous bractæ are not the least remarkable. It is a native of the Canary Islands, where it was found by Mr. Masson and introduced in 1779; if suffered to grow it will acquire a great height, become indeed too large for a small greenhouse, and more fit for a conservatory, for which it would appear to be a most desirable plant; it produces flowers abundantly during May and June, which are not only ornamental but deliciously fragrant. Strong-established plants usually produce perfect seeds, by which this shrub is increased; cuttings rarely succeed." (*Curtis's Botanical Magazine*, vol. 11-12, pl. 426, as *Cytisus foliolosus*.)

42184. *BERBERIS* sp. Berberidaceæ.

Barberry.

Received as *Berberis vilmoriniana*, for which a place of publication has not yet been found.

42185. *BERBERIS HOOKERI VIRIDIS* C. Schneid. Berberidaceæ. Barberry.

"An evergreen shrub, 3 to 5 feet high, producing a dense thicket of erect, angled stems which branch near the top. Leaves in tufts, 1 to 3 inches long, one-half to 1 inch wide; leathery, dark green above, glaucous white beneath. Flowers two-thirds inch across, pale yellow. Berries narrow, black purple, often remaining on the plant until the following spring. Native of the Himalayas. This shrub has been so much confused with *Berberis wallichiana* that it is difficult to disentangle the histories of the two. The true *B. wallichiana* is probably not in cultivation; it differs from *B. hookeri* in the larger leaves (3 to 4½ inches long) and especially in their veining; the veins branch out from the midrib, parallel with each other, but never reach the margin, becoming merged in a vein which runs parallel with it. In *B. hookeri* the veins fork near the margin, but do not merge into one another. *B. hookeri* flowers in April and May and as a rule is quite hardy. The only time I have known it to suffer much was during the trying winter of 1908-09, when it lost most of its leaves, and the upper portion of the stem was killed. Leaves uniformly bright green beneath. Although a marked characteristic of some plants, the white under surface of typical *B. hookeri* is not a wholly reliable distinctive character. I have seen young plants partly bright green and partly blue white beneath. The best way to increase this species and its varieties is by the seeds it so plentifully bears; they may be sown in shallow boxes or in pots and the young plants pricked out the following year into nursery rows. The type and the variety *viridis* are useful shrubs for planting in places where an evergreen is wanted that will keep fairly dwarf without pruning." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 243.)

42186. *CARAGANA ARBORESCENS REDOWSKI* Bean. Fabaceæ.

Pea tree.

"A remarkable shrub, with long, serpentine branches, which will sometimes grow for several years without dividing. It thus acquires a thin and open but not ungraceful habit and is altogether a striking plant. Whether the *Caragana redowski* mentioned by De Candolle in his *Memoir of Leguminosæ*, published in 1825, is the same as this is uncertain. It appears never to have been properly described. The plant is at Kew, but its history is not known." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 288.)

42183 to 42199—Continued.

42187. *CARAGANA MICROPHYLLA* Lam. Fabaceæ.

Altagana.

"Native of north-central Asia from Siberia to China; introduced in 1789. It flowers in May and June and is readily distinguished from all other species by the number and small size of its leaflets, the smallest scarcely one-eighth inch long. It is a shrub of graceful habit, much wider than high (16 feet in diameter at Kew), the branches being long, slender, but little divided, and ultimately more or less pendent. Grafted on standards of *Caragana arborescens* it makes a small tree, but sucker growths from the stock are often troublesome. It is suitable as a specimen for a lawn." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 291.)

42188. *CORNUS BRETSCHNEIDERI* Henry. Cornaceæ.

"A species with the young wood of a blood-red color; leaves opposite, lanceolate-ovate, dark green above, glaucous beneath; fruits blackish blue. China." (*Kew Bulletin*, 1900, p. 41.)

42189. *HYDRANGEA BRETSCHNEIDERI* Dipp. Hydrangeaceæ.

"A deciduous shrub, 8 to 10 feet high, forming a sturdy bush, old bark peeling; young branches smooth. Corymbs flattened, 4 to 6 inches across, with a considerable number of large sterile flowers at the margins; these are three-fourths to 1½ inches across, the three or four sepals rounded or obovate, white, afterwards rosy. The small, perfect flowers are dull white. Native of China; introduced from the mountains about Peking in 1882, by Dr. Bretschneider. Planted in a sunny position in good soil, this makes a really handsome shrub, flowering in June and July, perfectly hardy and always vigorous." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 624.)

42190. *HYDRANGEA XANTHONEURA WILSONII* Rehder. Hydrangeaceæ.

"A deciduous shrub, 8 feet or perhaps more high, of loose, thin habit, sending out long slender branches. Leaves in threes, ovate or oval, with a short, slender point, dark green and smooth above, pale beneath. Inflorescence a flattish, corymbose panicle, 5 or 6 inches across, margined with creamy white, sterile flowers 1½ inches across. Perfect flowers one-fourth inch across, dull white. Native of central China; introduced for Messrs. Veitch by Wilson about 1904. It is a shrub of elegant and distinct habit and with considerable beauty in flower. It has, perhaps, some affinity with *Hydrangea bretschneideri*, but is, as yet, imperfectly known in gardens." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 631.)

"The variety differs from the species (which has bright reddish brown bractlets with the bark without lenticels and soon separating into thin flakes) in having the new bractlets of each year grayish yellow while those of the previous year are grayish or light brown and marked with pale lenticels and the young leaves slightly appressed pubescent beneath." (*Sargent, Plantae Wilsonianae*, part 1, p. 27.)

42191. *HEDYSARUM ESCULENTUM* Ledeb. Fabaceæ.

"An erect Siberian *Hedysarum* with yellowish white flowers. According to Gmelin, the root is eaten by the natives of Jakutsk.

42192. *HEDYSARUM FLAVESCENS* Regel and Schmalh. Fabaceæ.

A suberect branching *Hedysarum* with yellow flowers, closely related to *Hedysarum neglectum* and *H. dasycarpum*. From the mountains of Kokan at Lake Iskander-Kul, at 7,000 feet altitude.

42183 to 42199—Continued.

42193. *HEDYSARUM SEMENOWII* Regel and Herd. Fabaceæ.

An erect *Hedysarum* from the steppes of the Balkasch region of Turkestan.

42194. *LARIX DAHURICA PRINCIPIS RUPPRECHTII* (Mayr) Rehd. and Wils. Pinaceæ. Larch.

"A tree in some parts of its native habitat as large as the common larch; bark scaling, but not fissured; young shoots pale brown, not downy. Leaves 1 to $1\frac{3}{4}$ inches long, not so tapered at the tip as in the common larch. Cones beautiful bright pink when young in April, ultimately three-fourths to $1\frac{1}{4}$ inches long, egg shaped, tapered toward the top; scales rounded, with the margins distinctly beveled, and differing from those of *Larix europaea* in not being downy, at least as a rule. Native of Saghalien, eastern Manchuria, and Siberia. The date of its introduction is unknown, but it was cultivated as long ago as 1739, at which time and for long afterwards it was thought to be a native of Newfoundland, where, however, no proof of its being a native exists. It thrives much better in Britain than *L. sibirica*, and in several places is from 60 to 80 feet high. At Kew, in poor soil, it is 50 feet high, with a trunk 3 feet 8 inches in girth. As a tree for park or garden it has nothing to recommend it before the common larch except its interest and the brighter hue of its young cones." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 6.)

42195. *SPIRÆA VEITCHI* Hemsl. Rosaceæ.

"A strong-growing shrub, probably 10 or 12 feet high eventually, producing gracefully arching shoots. Flowers in dense corymbs, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches across. Native of central China; discovered by Wilson in western Hupeh in 1900, and introduced by him for Messrs. Veitch. It is a fine species (Mr. Wilson has told me he considered it the best of Chinese Spiræas), somewhat similar in general aspect and in producing its flowers on short leafy twigs from the growths of the previous summer to the well-known *Spiræa canescens* (*flagelliformis*). It is readily distinguished from that species, however, by its smooth, entire leaves and smooth fruit. Its entire leaves also distinguish it from two other allies, *S. henryi* and *S. wilsoni*. I saw the plants first introduced in their young state in the Coombe Wood Nursery, when they were making shoots as much as 8 feet long in a season; when these the following June were wreathed from end to end with clusters of pure white blossom they made a picture of remarkable beauty." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 545.)

42196. × *PHYSALIS BUNYARDI* Hort. Solanaceæ.

"An interesting hybrid, growing to a height of 3 feet and having large fruits." (*Bunyard's catalogue*.)

"The plant called *Physalis bunyardi* Hort. is a very free-fruited form, not so robust as *P. franchetii*, with glowing calyces; probably a form of that species or by some suggested as a hybrid with *P. alkekengi*." (*Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2608.)

42197. *VIBURNUM HUPEHENSE* Rehder. Caprifoliaceæ.

"A deciduous shrub, the young shoots stellately hairy the first year, purplish brown the second. Leaves roundish ovate, coarsely toothed, dark green and covered with loose stellate down above, paler and more

42183 to 42199—Continued.

downy beneath; 2 to 3 inches long. Corymbs about 2 inches wide, the main and secondary flower stalks covered densely with stellate down; branches of the corymb usually five. Fruit egg shaped, red, one-third to two-fifths inch long. Native of Hupeh, China; discovered by Henry; introduced by Wilson in 1908. I do not know that it has yet flowered in cultivation, but it will no doubt soon do so. The above description is adapted from the original one of Mr. Rehder, who observes that it is most nearly related to *Viburnum dilatatum* (from which it differs in its orbicular-ovate leaves and stipuled leaf stalks) and to *V. betulifolium*, from which it is distinct in being downy on both leaf surfaces." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 650.)

42198. *VIBURNUM LOBOPHYLLUM* Graebn. Caprifoliaceæ.

"A deciduous shrub, with young shoots smooth or soon becoming so, dark reddish brown when mature. Leaves ovate to roundish or broadly obovate, coarsely toothed except toward the base. Corymbs 2 to 4 inches wide, with seven main branches which, like the secondary ones, are minutely downy and glandular. Flowers white, one-fourth inch across, stamens longer than the corolla, anthers yellow. Fruit bright red, roundish, one-third inch long. Native of western China; introduced by Wilson in 1901 and again in 1907 and 1910. It belongs to the confusing group of red-fruited Asiatic *Viburnums* containing *wrightii*, *betulifolium*, *dilatatum*, etc." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 652.)

42199. *VIBURNUM RHYTIDOPHYLLUM* Hemsl. Caprifoliaceæ.

"An evergreen shrub perhaps eventually 10 feet high and as much through. Leaves ovate-oblong, upper surface glossy, not downy, but deeply and conspicuously wrinkled; lower one grey with a thick felt or starry down. Flowers produced on large terminal umbellike trusses 4 to 8 inches across, which form into bud in the autumn and remain exposed all through the winter and until the blossoms expand the following May or June. They are dull yellowish white, about one-fourth inch in diameter. Fruit oval, one-third inch long, at first red, then shining black. Native of central and western China, introduced by Wilson for Messrs. Veitch in 1900. This remarkable shrub is one of the most distinct and striking not only of *Viburnums* but of all the newer Chinese shrubs. It appears to be quite hardy and flowers well in spite of the curious habit of forming its inflorescences and partially developing them in autumn. Its beauty is in its bold, wrinkled, shining leaves and red fruits. The flowers are dull and not particularly attractive. It was given a first-class certificate by the Royal Horticultural Society in September, 1907. During that month of the year its fruits are red." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 655.)

42200. *AMYGDALUS PERSICA NECTARINA* Ait. Amygdalaceæ.**Nectarine.**

From Harput, Turkey. Presented by Mr. Leslie A. Davis, American consul. Received March 24, 1916.

"Seed of the smooth-skinned peach, of the nectarine order, which is the better of the two varieties found here. This is an early variety, and I am informed that the best results are obtained by grafting." (Davis.)

42201. PLATANUS ORIENTALIS L. Platanaceæ. Oriental plane tree.

Presented by Mr. G. S. Miller, of the National Museum, through Mr. Frederick V. Coville, of the Bureau of Plant Industry. Received March 23, 1916.

"Seeds received from Dr. W. L. Abbott, of Philadelphia. Dr. Abbott states that they are from Kashmir, that the tree is a valuable shade tree of very rapid growth, handsome form, and enormous size, and that the seeds should be planted immediately. The Kashmir name is *chenar*. Dr. Abbott also states that the tree is not a native of Kashmir, but was brought from Persia." (Coville.)

See S. P. I. No. 42179 for previous introduction.

42202 to 42204.

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Received January 19, 1916. Notes by Dr. Griffiths.

42202. CHILOPSIS LINEARIS (Cav.) Sweet. Bignoniaceæ.
(*Chilopsis saligna* D. Don.)

"From the Santa Rita Mountains, Ariz. (No. 1099 DG., October 12, 1915.) This is a small willowlike tree inhabiting desert washes from Texas to California. It is very showy when in blossom, the flowers being purplish tinged and resembling those of a miniature catalpa. In nature its habit is quite open and lax, but it stands pruning and can easily be shaped as desired. The seed can probably be planted in the open in a situation where there is good drainage and where moisture conditions can be controlled when the hot, dry season arrives."

42203. DASYLIRION WHEELERI S. Wats. Liliaceæ. Sotol.

"The sotol is on the whole a rather stiff, formal plant of the yucca family. It has a short, thick trunk and long, narrow, flat, spiny-edged, gracefully drooping leaves, very different in this respect from the stiff, rigid century plants, which are not distant relatives. It does not sucker like the century plants, neither does the plant die when it has thrown up a flower stalk, thus leaving an ugly break in the planting. Its flower stalks are immense. They often reach a height of 8 or 10 feet, the myriads of small flowers occupying a solid spindle-shaped space 4 feet in length. The plant itself, with its glabrous graceful leaves, is handsome, but it is strikingly attractive from early blossoming until late winter after the mass of seed has fallen. The sotols are most attractive as specimen plants. In Mexico the leaves are stripped of their curved teeth by being pulled through a slit cut in a piece of tin and then woven into durable floor coverings, the ones we have seen lasting in good condition for two years under ordinary wear. The usual practice is for the weaver to enter the house with an armful of the leaves suitably stained and beginning in one corner of the room weave a mat to fit the floor, composing the design as he proceeds. The price is usually about 40 cents (Mexican money) per meter. From the stems of the plant, particularly in the State of Chihuahua, is manufactured one of the most violent of intoxicating distillates. In times of excessive drought the plants are cut down and the stems chopped up as feed for live stock. I believe that the seed of this planted where drainage is good and where moisture conditions can be controlled can be brought through in the open."

42202 to 42204—Continued.

42204. *ERYTHRINA FLABELLIFORMIS* Kearney. Fabaceæ.

"A low, spiny shrub, 2 to 4 feet high, inhabiting the upper foothills of the isolated mountain ranges of the Southwest. Its beans range from cream through yellowish or coffee color to bright scarlet. It is deciduous in its native heath and will fill about the same rôle in planting as the smaller coral beans now grown. It will probably prove more hardy than the introduced species."

42205 to 42209. *TRITICUM* spp. Poaceæ.

Wheat.

From Sydney, New South Wales. Presented by Mr. George Valder, under-secretary and director, Department of Agriculture. Received March 15, 1916. Notes by Mr. Valder.

"From the Cowra Experiment Farm."

42205. *TRITICUM TURGIDUM* L.

"Galland's Hybrid."

42206. *TRITICUM DURUM* × *POLONICUM*.

"Nevertire."

42207. *TRITICUM AESTIVUM* L.

(*Triticum vulgare* Vill.)

"Blout's Lambrigg."

42208. *TRITICUM AESTIVUM* L.

(*Triticum vulgare* Vill.)

"Nyngan."

42209. *TRITICUM POLONICUM* L.

"Polish."

42210. *SOLANUM TUBEROSUM* L. Solanaceæ.

Potato.

From Summer Hill, Mallow, Ireland. Tubers presented by Mr. J. F. Williamson. Received March 18, 1916.

"*Leinster Wonder*. It is a very vigorous grower, showing great immunity from disease, and is of excellent table quality. Haulm very dark green, of great strength, with strikingly large white flowers." (*Williamson's Catalogue of Seed Potatoes*.)

42211 to 42222. *LIGUSTRUM OVALIFOLIUM* × *OBTUSIFOLIUM* REGELIANUM. Oleaceæ.

Privet.

From New Haven, Conn. Cuttings presented by the Elm City Nursery Company. Received March 29, 1916.

"Origin of the hybrid privet—seed parent *Ligustrum ovalifolium*, pollen parent *Ligustrum obtusifolium* [regelianum] (northern type). Seed obtained from *Ligustrum ovalifolium* in the fall of 1910 from a single plant in a group of several *obtusifolium*. The seed plant attracted our attention as it hung heavy with fruit, which is not common in this vicinity. The inference was that cross-fertilization had taken place with *obtusifolium*. The seedlings, some hundreds of which were planted in the field the following season, showed every indication that the crossing did take place. No two are very similar, varying greatly from upright to almost prostrate in habit, some very luxuriant and others quite dwarf, some now producing terminal clusters of fruit, while others fruit on the lateral branches only. Many have glossy leaves which are quite as persistent as *ovalifolium*; the foliage of others matures early. From the

original planting we have now reduced the number which have unquestioned merit to 50, and these are growing at Edgewood. They vary at present in height from 2 to 12 feet. We anticipate that some of them will prove to be valuable hedge plants, partaking enough of the characteristics of *ovalifolium* to give these plants desirable hedge qualities and at the same time prove more hardy owing to the infusion of *obtusifolium* blood. They have not yet been subjected to temperature exposures which have killed *ovalifolium* entirely to the ground, conditions which do occur occasionally in this vicinity, so their relative hardiness has not been absolutely determined as yet." (*Elm City Nursery Co.*)

42223 to 42267. RIBES spp. Grossulariaceæ.

From Lethbridge, Alberta, Canada. Cuttings presented by Mr. W. H. Fairfield, superintendent, Experimental Station for Southern Alberta, Received March 29, 1916.

Requested by this office for the studies of the Office of Horticultural and Pomological Investigations.

42223 to 42239. RIBES NIGRUM L.

Black currant.

42223. <i>Topsy.</i>	42232. <i>Climax.</i>
42224. <i>Eclipse.</i>	42233. <i>Beauty.</i>
42225. <i>Success.</i>	42234. <i>Winona.</i>
42226. <i>Merveille de la Gironde.</i>	42235. <i>Monarch.</i>
42227. <i>Ethel.</i>	42236. <i>Eagle.</i>
42228. <i>Saunders.</i>	42237. <i>Norton.</i>
42229. <i>Ontario.</i>	42238. <i>Kerry.</i>
42230. <i>Bang-Up.</i>	42239. <i>Lee's Prolific.</i>
42231. <i>Magnus.</i>	

42240 to 42267. RIBES VULGARE Lam.

Garden currant.

42240. <i>Red Dutch.</i>	42254. <i>Large Red.</i>
42241. <i>Victoria.</i>	42255. <i>Frauenderfer.</i>
42242. <i>New Red Dutch.</i>	42256. <i>Champagne.</i>
42243. <i>Fay's Prolific.</i>	42257. <i>Moore's Seedling.</i>
42244. <i>Red Grape.</i>	42258. <i>Pomona.</i>
42245. <i>Raby Castle.</i>	42259. <i>Climax.</i>
42246. <i>Greenfield.</i>	42260. <i>Large White.</i>
42247. <i>La Conde.</i>	42261. <i>Kaiser.</i>
42248. <i>Rankin's Red.</i>	42262. <i>Verrieris White.</i>
42249. <i>Wilder.</i>	42263. <i>White Brandenburg.</i>
42250. <i>Cumberland.</i>	42264. <i>White Cherry.</i>
42251. <i>Prince Albert.</i>	42265. <i>White Grape.</i>
42252. <i>Long-Bunched Holland.</i>	42266. <i>White Pearl.</i>
42253. <i>Red English.</i>	42267. <i>Wentworth Leviathan.</i>

42268. FERONIA LIMONIA (L.) Swingle. Rutaceæ. Wood-apple. (*Feronia elephantum* Correa.)

From Poona, India. Presented by the superintendent, Empress Botanical Gardens. Received March 31, 1916.

A spiny, deciduous tree, native of India, Ceylon, and Indo-China, with pinnate, three to seven foliate leaves and nearly globose fruits, 2½ to 3 inches in diameter, having a hard, woody rind, filled with pinkish edible pulp in which numerous woolly seeds are immersed. The pulp, which is acid, is used for

making jelly, somewhat similar to black currant jelly, and also, with spice, oil, and salt, it is used by the natives of India to make chutney. The flowers and leaves have an odor of anise and are used as a stomachic. The commonly cultivated varieties of citrus can be grafted on this plant. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 3, p. 1219.*)

42269. PASSIFLORA LIGULARIS JUSS. Passifloraceæ.

Sweet granadilla.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received March 30, 1916.

"A passion flower with climbing, large-branched stem of great length, woody below, somewhat corky, and large leaves bright green above, pale and glaucous beneath. The white flowers are marked with reddish purple, becoming almost blue at the edges. This fine passion flower recommends itself, not only by the beauty and delicacy of its blossom, but by the size and rich green of the foliage. It is a native of Peru." (*Curtis's Botanical Magazine, vol. 57, pl. 2967, 1830.*)

42270. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

From Tamatave, Madagascar. Presented by Mr. James G. Carter, American consul. Received March 29, 1916.

"Commonly known in Madagascar as *pois du cap* (cape beans). The annual quantity of cape beans exported from the west coast of Madagascar each year amounts to about 7,000 tons. These go principally to England, and from there are exported in considerable quantities to the New York market. There does not seem to be very much beriberi in Madagascar. It is understood, however, that four or five years ago, when Saigon rice was imported into the colony, this disease was somewhat prevalent. There would not appear to be any special means adopted, peculiar to Madagascar, for the treatment of this disease, and the use of this bean as a preventive and cure for beriberi has not been known here." (*Carter.*)

42271 to 42273.

From Kingston, Jamaica. Presented by Mr. H. M. Curran. Received March 31, 1916.

42271. CAESALPINIA CORIARIA (Jacq.) Willd. Cæsalpiniaceæ.

"*Divi-divi*. Small spreading trees 20 to 30 feet high, with fine foliage. The trees are covered with fruits. The tree has much the habit of *Propolis* and is similar in appearance. This is the great tannin tree of northern South America." (*Curran.*)

42272. TOLUIFERA BALSAMUM L. Fabaceæ.

Toulu.

"A large ornamental tree, used for street planting. It grows to a height of 50 to 75 feet and is of rapid growth, in habit resembling the elm." (*Curran.*)

42273. BLIGHIA SAPIDA Koen. Sapindaceæ.

Akee.

The akee, a beautiful African tree introduced into the West Indies. Valued in Jamaica as a richly flavored and wholesome food. The bright-yellow fleshy arillus is the part eaten, but it should not be eaten if in the least decayed. The fruit is prepared in various ways, stewed in milk and afterwards browned in a frying pan with butter. It is also commonly eaten boiled and mixed with salt fish, onions, and tomatoes as a breakfast food. (Adapted from *Cook and Collins, Economic Plants of Porto Rico, p. 92.*)

See S. P. I. Nos. 1969 and 24592 for previous introductions.

42274. PYRUS MAMORENSIS Trabut. Malaceæ. **Pear.**

From Mustapha, Algiers. Presented by Dr. L. Trabut, director, Service Botanique, Algeria. Received March 31, 1916.

"A Moroccan pear from the Mamora. Very resistant to dryness in the sandy noncalcareous soils. This vigorous tree will probably form a good stock." (Trabut.)

42275 and 42276.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received March 16, 1916.

42275. BETA VULGARIS L. Chenopodiaceæ. **Beet.**

"Grown in Japan."

42276. ZEA MAYS L. Poaceæ. **Corn.**

"A corn with a very short cob grown on the slopes of Mount Fuji."

42277. NYSSA OGECHIE Marsh. Cornaceæ. **Ogeechee lime.**

From Burroughs Station, Ga. Presented by Mr. S. B. Dayton. Received March 20, 1916.

A tree sometimes 65 feet high, with a maximum trunk diameter of 2 feet, with simple, entire leaves, and bearing red, very acid drupes two-thirds of an inch long.

42278. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**

(*Sorghum vulgare* Pers.)

From Tahiti, Society Islands. Presented by Mr. Edouard Ahnne, president, Chamber of Agriculture, through Mr. Thomas B. L. Layton, American consul. Received March 11, 1916.

"*To-ura*, indigenous. False grass of Guinea. Herbaceous plant, smooth, perennial. Stems upright, full, greenish yellow, $1\frac{1}{4}$ to 2 mm.; a little woody, internode from 0^m 20 to 0^m 25, few leaves at the base. Leaves green, sheath smooth, bearded at the apex, striated with age by red marks, length 50 to 60 cm., breadth 2 cm., midrib prominent, margin lightly scarious. Panicle from 35 to 40 cm.; reddish spikelets grouped by two or three in whorls. Roots fibrous. This grass grows in Tahiti in a wild state, all along the creeks, on the roadsides, and on the uncultivated lands. The horses and cattle seek for it willingly when it is young; later the stem becomes woody and hard." (Ahnne.)

"With regard to the plant known here as *to-ura*, I am inclined to believe that it is none other than the common guinea grass known in the United States. That grass is grown in certain sections of these islands as forage for cattle and horses, but it is also found in the wild state over large areas. It was not originally indigenous, but it has thrived since its introduction. The name *to-ura* is pronounced in the native Tahitian as though it were spelled *tow rah*, the tow as in the word tower." (Layton.)

42279. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

From Invercargill, New Zealand. Presented by Dalgety & Co. (Ltd.). Received March 15, 1916.

For use in selection and breeding experiments.

42280. INODES TEXANA O. F. Cook. Phœnicaceæ.**Palm.**

Collected by Dr. David Griffiths, of the Bureau of Plant Industry. Growing at the Plant Introduction Field Station, Chico, Cal.

"This native palm of the Rio Grande delta, while planted locally to some extent, is a species which has been neglected. It will fill the same rôle in planting as the fan palm and appears to be a little more hardy to frost conditions. It will form a pleasing variation from that species so extensively grown in the warmer regions of this country and serve to extend somewhat the region of possible palm culture. It is a species with a very local distribution in nature, being known only from this one delta region. It is producing well in the natural state at present. The seeds germinate readily soon after they fall from the trees in the late autumn. They are, however, extensively gathered and made into ornaments by the native population. This no doubt interferes decidedly with its reproduction." (*Griffiths.*)

42281. MEDICAGO SATIVA L. Fabaceæ.**Alfalfa.**

From Koorawatha, Narracan, Victoria, Australia. Presented by Messrs. Cullis, Hill, and Doake, through F. H. Brunning & Co., Melbourne. Received March 16, 1916.

"A strain known as *Hunter River lucern.*"

42282 and 42283.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 18, 1916.

42282. CARAGANA PYGMAEA (L.) DC. Fabaceæ.**Dwarf pea tree.**

"A deciduous shrub, 3 to 4 feet high, similar in habit to *C. aurantiaca*, having long, slender, pendulous, or even prostrate branches. Flowers yellow, 1 inch long, produced in May and June at the joints of the previous season's shoots. In a wild state this species extends over the region between the Caucasus and Siberia and Thibet; introduced in 1751. It is a very pretty plant when in flower, the blossoms being pendulous on their short stalks from the lower side of the branchlets. It is often grafted on standards of *Caragana arborescens*, but can quite well be struck from cuttings made of half-woody young twigs in July and placed in gentle heat. By growing it on its own roots the ugly and often diseased union seen on grafted plants is avoided. It is nearly allied to *C. aurantiaca*, under which the differences are pointed out. Its slender, flexible shoots are used for tying in Siberia and are said to be equal to osiers for that purpose." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 291.*)

42283. HALIMODENDRON HALODENDRON (Pall.) Voss. Fabaceæ. Salt tree.
(*Halimodendron argenteum* Fisch.)

"This is a wide-spreading shrub with slender branches and small bluish green foliage, covered in early summer with numerous pale violet or rosy purple flowers. The small pale foliage and the slender-stalked drooping flowers combined with the spreading habit give to the plant a gracefulness and airiness of its own and make it a very desirable ornamental shrub. It is perfectly hardy north, resists drought and heat well, and thrives in sandy as also in saline and alkaline soils. Propagation is by seeds and by layers which root slowly; it also may be grafted on Laburnum or Caragana." (*Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1429.*)

42284. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. Pearl millet.
(*Pennisetum typhoideum* Rich.)

From Dakar, Senegal, Africa. Presented by Mr. W. J. Yerby, American consul, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received March 23, 1916.

"This head of pearl millet from Mr. W. J. Yerby measures 26 inches in length, while the average length of pearl millet heads is not more than 8 to 10 inches. Although of exceptional size the head is well filled, and the strain should be a good seed producer if it will mature in our Southern States." (H. N. Vinall.)

42285. CELTIS TALA Gillies. Ulmaceæ. Nettle tree.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Tala*. A large spiny tree, which is suitable for shaping, and especially for street planting. From the cool and temperate regions of Argentina." (Carrasco.)

42286 to 42291.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42286. CASUARINA GLAUCA Sieber. Casuarinaceæ. Beefwood.

"The *Australian oak*, or *swamp oak*, is a tree of moderate size, growing to the height of 60 to 70 feet, usually straight and of rapid growth. The timber is red, beautifully marked, hard and tough, and is used for cabinet work and staves. In periods of drought the foliage is used for feeding stock. When the trees are cut down, the young growth shoots up quickly from the stump. It grows in the coastal districts here, in marshy country, and frequently in land submerged with tidal water. The timber makes the very best fuel, and the tree is the second best that I know of for planting in wet or moist locations. It also makes a good and handsome shade tree." (B. Harrison, in *The Everglades Magazine*, April, 1913.)

42287. CORNUS CAPITATA Wall. Cornaceæ. Bentham's cornel.

A small tree or shrub, often low and bushy in cultivation, but reported to have the appearance of a small apple tree in Nepal, where it is a native. It bears dense heads of yellowish flowers and attractive deep red-orange fruits about the size of a nectarine. (Adapted from *Curtis's Botanical Magazine*, vol. 78, pl. 4641, 1852.)

42288. GLEDITSIA CASPICA Desf. Cæsalpiniaceæ. Honey locust.

A tree 30 to 50 feet high, of beautiful foliage, with strong spines sometimes 8 inches long, pod 6 to 7 inches long and about 1 inch broad. Hohenacker [Enum. Talysch, Bull. Soc. Nat. Mosc., 1838:351] states that the tree is abundant toward the village of Astara in Talysch Province, Russia, and is known by the Tartar name *lelegachatsch*; also that boys eat the sweet pulp of the pods, and that the pods are collected for fattening cattle. Its habitat is Asia, along the southern shore of the Caspian.

42289. PASSIFLORA FILAMENTO Cay. Passifloraceæ. Granadilla.

A handsome bluish passion flower resembling *Passiflora coerulea*, but differing in the brighter colors of the corona and in the corolla exceeding considerably the calyx. The flowers open in the night and close about noon the next day. Native of South America. (Adapted from *Curtis's Botanical Magazine*, vol. 46, pl. 2023, 1819.)

42286 to 42291—Continued.

42290. *PASSIFLORA HERBERTIANA* Ker. Passifloraceæ.

Granadilla.

A white-flowered, tall climber with 3-lobed, cordate leaves, from New Holland. (Adapted from the original description in *Edwards's Botanical Register*, vol. 9, p. 737, 1823.)

42291. *PASSIFLORA SUBEROSA* L. Passifloraceæ.

Granadilla.

An extremely variable species with attractive fruits. These are spotted when green and are deep violet colored when ripe. Native of the West Indies. (Adapted from *Curtis's Botanical Magazine*, vol. 45, pl. 1983, 1818.)

42292. *CHORISIA INSIGNIS* H. B. K. Bombacaceæ.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916.

"*Palo borracho*. An ornamental flowering tree, with very thick trunk, the pods of which produce vegetable wool. From the Argentine Tropics." (*Carrasco*.)

42293 to 42299.

From Siena, Italy. Presented by the director, Botanic Garden, University of Siena. Received March 24, 1916.

42293. *PITTOSPORUM BICOLOR* Hook. Pittosporaceæ.

Usually a bushy shrub or small tree, though occasionally attaining a height of 40 feet; the thick, narrow leaves, 1 to 2 inches long, entire, hairy beneath and usually crowded, the purple and yellow flowers often forming terminal clusters. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 113, 1863.)

42294. *PITTOSPORUM ERIOCARPUM* Royle. Pittosporaceæ.

A small tree with somewhat whorled spreading branches, nearly or quite obovate leaves (3 to 8 by 1½ to 2 inches), and yellow flowers one-third of an inch long in compound, many-flowered corymbs. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 199, 1872.)

42295. *PSIDIUM ACRE* Ten. Myrtaceæ.

Guava.

This species is imperfectly known, in America at least. Trees introduced into California under this name are said to greatly resemble the yellow strawberry guava (*Psidium cattleianum lucidum*), but to have more elongated and usually larger fruit.

42296. *PSIDIUM MONTANUM* Swartz. Myrtaceæ.

Mountain guava.

A lofty tree, sometimes 100 feet in height, with very smooth ash-colored bark. Flowers large, white, with the odor of bitter almonds; berry sour, the size of a cherry. The wood is hard, white, and highly esteemed, affording a timber of the hardest description, with the grain beautifully variegated, but not much used in building, perhaps on account of its hardness and cross grain and because when used as posts it rots quickly in the ground. It occurs at elevations of 3,000 to 6,000 feet. (Adapted from *William Fawcett, Economic Plants*.)

42297. *PTEROCARYA FRAXINIFOLIA* (Lam.) Spach. Juglandaceæ.(*Pterocarya caucasica* Meyer.)

A handsome, ornamental, deciduous tree of rapid growth, up to 60 feet high, with spreading branches, graceful dark-green foliage, and bearing drooping racemes of light-green fruits. (Adapted from *Bailey, Cyclopedic of American Horticulture*, vol. 3, p. 1464, 1904.)

42293 to 42299—Continued.

42298. *SAMBUCUS EBULUS* L. Caprifoliaceæ.

Danewort.

"A large herbaceous plant with pinnate leaves and compact clusters of purplish flowers; native of Europe. Every part of this plant is cathartic and emetic. The plant is sufficiently active to be poisonous in larger quantities." (*Sowerby, English Botany, vol. 4, p. 202.*)

For an interesting discussion of this plant, see Lindley, *Treasury of Botany*.

42299. *SOLLYA HETEROPHYLLA* Lindl. Pittosporaceæ.

An attractive twining shrub, 3 to 4 feet high, with oblong entire leaves and terminal or axillary pendulous clusters of beautiful bright-blue bell-shaped flowers. (Adapted from *Curtis's Botanical Magazine, vol. 10, pl. 3523, 1836.*)

42300 to 42309.

From Tamingfu, Chihli, North China. Cuttings presented by Mr. J. G. Cole, at the request of Rev. Horace W. Houlding, South Chihli mission, through the American consul, Shanghai. Received March 31, 1916. Quoted notes by Mr. Cole.

42300 and 42301. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)42300. "No. 9. *Lin t'ao*." 42301. "No. 10. *Lin t'ao*."42302 and 42303. *HIBISCUS SYRIACUS* L. Malvaceæ. Rose of Sharon.42302. "White *Mu chin* (Chinese). A flowering shrub."42303. "Purple *Mu chin* (Chinese). A flowering shrub."42304. *PYRUS* sp. Malaceæ.

Pear.

"Wild pear."

42305 to 42309. *ZIZIPHUS JUJUBA* Mill. Rhamnaceæ.

Jujube.

(*Ziziphus sativa* Gaertn.)42305. "*Pu tao tsao*."42308. "*Pu tao tsao*."42306. "*Tan tsao*."42309. "*Ma yü tsao*."42307. "*Pu tao tsao*."

42310 to 42320.

From Kieff, Russia. Purchased from Messrs. St. Przedpelski and T. Antoniewicz. Received March 17, 1916.

42310. *ACER GINNALA* Maxim. Aceraceæ.

Maple.

A small tree or large shrub of bushy habit with 3-lobed slightly heart-shaped leaves and very fragrant white flowers in short panicles, appearing in May. This maple is nearly allied to *Acer tataricum*, but differs markedly in the shape of the leaf. The foliage turns a beautiful red before falling, the species being one of the best for autumnal coloring. Native of China, Manchuria, and Japan. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 142, 1914.*)

42311. *ABIES SIBIRICA* Ledeb. Pinaceæ.

Fir.

A very hardy fir from northern and eastern Russia to Kamchatka and Mongolia, 60 to 100 feet in height, with a trunk 2 to 4 feet in diameter; dark yellowish green leaves, densely crowded. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 173, 1914.*)

42310 to 42320—Continued.

42312. *CARAGANA SPINOSA* (L.) DC. Fabaceæ.

Pea tree.

A deciduous shrub, 4 to 6 feet in height, with long, undivided, spiny branches and short-stalked bright-yellow flowers nearly an inch long. A curious shrub of the same type as *Caragana jubata* and *C. gerardiana*, but not so formidably armed or so downy. Native of Siberia. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 291, 1914.)

42313. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ.

Hawthorn.

A small tree, 15 feet or more high, with or without short thorns; leaves wedge shaped or straightly cut at the base, 2 to 4 inches long; pure white flowers three-fourths of an inch across, in downy-stalked clusters, appearing at the end of May or early in June. Fruit red and about five-eighths of an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 433, 1914.)

42314. *JUGLANS MANDSHURICA* Maxim. Juglandaceæ.

Manchurian walnut.

A Manchurian walnut, 50 to 70 feet high, with leaves $1\frac{1}{2}$ to 2 feet or occasionally 3 feet long, composed of 11 to 19 leaflets. The fruit is clustered on the stalk and is roundish ovoid, with deeply pitted nuts $1\frac{1}{2}$ inches long. It is very closely allied to *Juglans sieboldiana*; it is remarkably striking in the size of the leaves as a young tree. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 666, 1914.)

42315. *LONICERA CHRYSANTHA* Turcz. Caprifoliaceæ.

Honeysuckle.

A shrubby honeysuckle from Japan, up to 12 feet high, with upright stems, somewhat rhombic leaves 2 to 5 inches long and yellowish white, changing to yellow, flowers three-fourths of an inch long. It is particularly handsome in autumn with its bright coral-red fruit. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1910, 1916.)

42316. *LONICERA HISPIDA* Pall. Caprifoliaceæ.

Honeysuckle.

A honeysuckle, native of Turkestan, 3 to 5 feet high, with bristly young shoots and yellow or yellowish white flowers about an inch long borne above two roundish, membranaceous bristle-edged bracts, up to an inch long. Interesting because of the large bracts subtending the flowers. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 45, 1914.)

42317. *LONICERA RUPRECHTIANA* Regel. Caprifoliaceæ.

Honeysuckle.

A shrubby Manchurian honeysuckle up to 12 feet high, with nearly lanceolate leaves, somewhat grayish beneath, about 4 inches long, and pure white flowers in pairs on long peduncles. The red, or sometimes yellow, fruits are attractive. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1909, 1916.)

42318. *RIBES DIKUSCHA* Fisch. Grossulariaceæ.

Black currant.

This species is closely related to the common black currant, *Ribes nigrum* and is considered by Schneider to be possibly identical with the northern black currant (*R. hudsonianum* Richards).

42319. *SYRINGA EMODI* Wall. Oleaceæ.

Lilac.

A large robust Himalayan lilac 10 to 15 feet high, closely allied to *Syringa villosa*, but with the leaves whiter underneath. The panicles are

42310 to 42320—Continued.

usually columnar, 3 to 6 inches long, not so richly colored as those of the above-mentioned species. It is useful in flowering rather late. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 566, 1914.)

42320. *VITIS AMURENSIS* Rupr. Vitaceæ.

Amur grape.

A strong-growing deciduous vine, somewhat similar to the common grape, with leaves 4 to 10 inches wide, somewhat longer, three lobed, often deeply so, and the under surface somewhat downy. It is worth growing for its vigorous habit and the usually fine purple and crimson hues of its foliage. Native of Amurland, Chosen (Korea), and northern China. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 666, 1914.)

42321 to 42332.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 23, 1916.

42321. *ACACIA BONARIENSIS* Gillies. Mimosaceæ.

"*Napinday*. A handsome, very spiny tree, suitable for parks, from the temperate and cool sections of Argentina." (*Carrasco*.)

"Usually a small spiny tree which grows at length in circles. The yellow wood is hard, but has not been used. Horizontal cuts across the young shoots give a square section." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 37, 1910.)

42322. *ACACIA MONILIFORMIS* Griseb. Mimosaceæ.

"*Tusca*. A spiny tree, with fragrant flowers, of medium height. From the temperate and cool regions of Argentina." (*Carrasco*.)

"A species of *Espinillo* with yellow flowers separated on the stalk. Small branched, scarcely compact; grows in the valleys of the highlands; used for firewood. Wood reddish. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 35, 1910.)

42323. *ALEGRIA DIVARICATA* (Mart.) Stuntz. Tiliaceæ.(*Luehea divaricata* Mart.)

"*Soto caballo*. A leafy flower-bearing tree, with good quality wood; from the cool and subtropical regions of Argentina." (*Carrasco*.)

"Very abundant tree, large and tall, with light, white wood, used especially for the manufacture of shoes. When in flower it is very beautiful. It is not utilized in Alto Parana, but in Alto Uruguay it is used for rods, frames and doors, and windows and planking. It is exported to the cities along the rivers of Uruguay." (*Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 100, 1910.)

42324. *ASPIDOSPERMA PEROBA* Sald. Gama. Apocynaceæ.

"*Peroba*. An erect tree with flexible wood; from the subtropical regions in Argentina." (*Carrasco*.)

A Brazilian tree with alternate entire leaves and clusters of small flowers. The wood of this genus is valuable.

42321 to 42332—Continued.

42325. *BARYXYLUM DUBIUM* (Spreng.) Pierre. *Cæsalpiniaceæ*.
(*Peltophorum vogelianum* Walp.)

"*Ibirá-pitá*. A leafy tree, with erect trunk 1 meter in diameter; wood hard, indestructible, red; from the subtropical regions of Argentina." (*Carrasco*.)

A handsome ornamental tree with mimosalike foliage and striking yellow flowers arranged in huge panicles. It is closely related to the royal poinciana and vies with it in beauty of flower and foliage.

42326. *COMBRETUM FRUTICOSUM* (Loefl.) Stuntz. *Combretaceæ*.
(*Combretum loeflingii* Eichl.)

"*Plumerillo*. A magnificent climbing plant of rapid growth, the flowers resembling the *Grevilleas*; from the temperate regions of Argentina." (*Carrasco*.)

An ornamental climbing shrub with orange and green flowers; native to Brazil.

42327. *GLEDITSIA AMORPHOIDES* (Griseb.) Taub. *Cæsalpiniaceæ*.
(*Garugandra amorphoides* Griseb.) **Honey locust.**

"*Espina corona*. A leafy tree with hard wood; from the temperate and cooler regions of Argentina." (*Carrasco*.)

"A spiny tree, flowering in December; sometimes attains a height of 50 feet, trunk diameter often 2½ feet. Hieronymus states that the bark is used in place of soap for removing spots from woolen and cotton goods; hence the name *quillay*. The leaves, young twigs, and roots have astringent properties; the wood is used in making vessels for holding liquids, in turning, for house furniture, and for wooden soles and pegs." (*Taubert, Berichte Deutsche Bot. Gesellsch., vol. 10, p. 637.*)

42328. *PITHECOCTENIUM CYNANCHOIDES* DC. *Bignoniaceæ*.

"*Tripa de Braya*. A vigorous climbing plant; from the temperate and hot regions of Argentina." (*Carrasco*.)

42329. *PROSOPIS* sp. *Mimosaceæ*. **Algaroba.**

"*Algaroba morada*. A hardy, strong tree. The wood is especially useful for sleepers, tannin extraction, etc. From the cool and temperate as well as the subtropical regions of Argentina." (*Carrasco*.)

Received as *Prosopis dulcis*, which is generally considered to be a synonym of *P. chilensis* (Mol.) Stuntz (*P. juliflora* DC.), but the material received does not agree with other material of that species.

42330. *STIGMAPHYLLON JATROPHAEFOLIUM* Juss. *Malpighiaceæ*.

"*Papa del río*. A magnificent climbing plant with numerous flowers like *Oncidium*; from the temperate regions of Argentina." (*Carrasco*.)

A tropical American woody vine with yellow flowers in axillary, peduncled clusters.

42331. *TIPUANA TIPU* (Benth.) Lillo. *Fabaceæ*.
(*Tipuana speciosa* Benth.)

"*Tipu*. A large tree 50 meters in height, leafy, very ornamental, with good timber; from the subtropical, temperate, and cool regions of Argentina." (*Carrasco*.)

"Handsome tree, tall, large, straight trunked. Wood rose color to creamy white, soft and stringy, hard to saw and used very little in Jujuy, but in Tucuman it is used for bookshelves; also exported to

42321 to 42332—Continued.

Buenos Aires. It gives a fine red rosin. Very abundant." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 37, 1910.*)

42332. *VITEX MONTEVIDENSIS* Cham. Verbenaceæ.

"*Tarumá*. A leafy little ornamental tree, floriferous, with hard wood; from the subtropical regions of Argentina." (*Carrasco.*)

"This common species is found on the banks of the small streams; the wood, of reddish color, striped, and hard, is very good and valuable. The bark of the tree is fragile and grooved like that of the *Mata ojos* (*Pouteria* sp.) As it is well preserved in wet situations it is utilized for kilns, posts, etc., and being easy to split it is used for shingles on roofs. The fruit gives a kind of oil and the wood likewise, even after it is dried; when buried it oozes oil and seems to turn green again." (*Venturi y Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 104, 1910.*)

42333 to 42354. *NICOTIANA* spp. Solanaceæ.

Tobacco.

From Cava, Italy. Presented by Mr. C. Emilio Anastasia, Ra Direzione Compartimentale delle Coltivazioni Tabacchi. Received March 25, 1916.

42333. *NICOTIANA ACUMINATA* (R. Grah.) Hook.

Herbaceous annual, viscid-pubescent; stem slender, branching; leaves ovate-lanceolate, undulate, sometimes subcordate, narrowed into a short petiole, apex long-acuminate; flowers loose-racemose; calyx glandular-pubescent, corolla white, about 3 inches long; tube green veined, slightly curved. Perennial in its native habitat, Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2142.*)

42334. *NICOTIANA ALATA* Link and Otto.

Herbaceous perennial with slender erect stems 2 to 3½ feet tall and branching; flowers open at night and fragrant; tube yellowish green, limb nearly 2 inches across, pale violet beneath, white within. Native of Brazil, Uruguay, and Paraguay. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2141.*)

42335. *NICOTIANA CHINENSIS* Fisch.

An annual species growing to a height of 6 feet and having pink flowers in August. Originally found in China. (Adapted from *Johnson's Gardener's Dictionary, p. 658.*)

This species is referred by Comes, *Monographia Nicotiana*, p. 9, 1899, to the *angustifolia* form of *N. tabacum fruticosa* Hook. f.

42336. *NICOTIANA GLAUCA* R. Grah.

An erect, treelike species, up to 20 feet tall, glaucous-blue all over, with branching stems and long-petioled leaves. Flowers yellow, in loose, terminal, bracted panicles. Found in Argentina, Paraguay, and Bolivia. Easily grown from seed and frequently cultivated for its stately habit and glaucous-blue foliage which sometimes develops purple tints. It has escaped from cultivation and runs wild in Texas and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2143.*)

42337. *NICOTIANA LANGSDORFII* Schrank.

A pilose to downy herbaceous annual, with branching stems 2 to 3 feet tall; flowers greenish yellow in drooping panicles. Native of

42333 to 42354—Continued.

Brazil and Chile. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2143.)

42338. NICOTIANA LONGIFLORA Cav.

An erect annual or perennial, 2 to 3 feet tall, having slender, bristly, scabrous stems and somewhat clasping, spatulate to lanceolate leaves, prominently undulate. Night-opening fragrant flowers 4 inches long, extra-axillar, in terminal loose racemes, pale violet to yellowish violet outside, white within, with yellowish violet anthers. Becomes an annual in northern gardens. Found from Texas to Chile and Argentina. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2141.)

42339. NICOTIANA PANICULATA L.

An herbaceous, viscid-pubescent annual having a simple stem 2 to 3 feet tall, angular above, branching; yellowish green flowers in large terminal panicles. Not much cultivated. Native of Peru. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2143.)

42340. NICOTIANA PLUMBAGINIFOLIA Viv.

An annual species growing to a height of 2 feet and having white flowers in May. Native of America. (Adapted from *Johnson's Gardener's Dictionary*, p. 658.)

42341. NICOTIANA QUADRIVALVIS Pursh.

An herbaceous, viscid-pubescent annual having erect or branching stems with leaves 4 to 6 inches long. Flowers few on short slender pedicels, purple without and white within. Formerly cultivated by the Indians and still grown by them sparingly. Known only from Indian cultivation in Oregon and Wyoming. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2142.)

42342. NICOTIANA RUSTICA L.

An herbaceous plant, annual, biennial, or triennial, somewhat viscous pubescent, having stems about 3 feet tall, branching below. Yellowish or greenish day-opening flowers in terminal racemes. Found in Mexico and Texas. Said to be the first species of tobacco introduced into Europe. Its use was made known by Jean Nicot, for whom the genus was named. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2143.)

42343. NICOTIANA RUSTICA L.

Received as *Nicotiana campanulata*. For a description, see S. P. I. No. 42342.

42344. NICOTIANA SILVESTRIS Speg. and Comes.

An herbaceous perennial, glandular-pilose throughout, having tall stems, leafy below, branching above; broad, oblong-spatulate leaves. White, fragrant flowers drooping in short racemose panicles. A night bloomer, but flowers remain open on cloudy days. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, 2141.)

42345. NICOTIANA SUAVEOLENS Lehm.

An herbaceous annual or biennial, usually viscid, having stems 1 to 2 feet tall, densely villous at the base and glabrous above. Night opening, fragrant, greenish purple flowers in terminal racemes. Found in Australia. Said to grow in moderate shade. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2142.)

42333 to 42354—Continued.

42346. *NICOTIANA TABACUM* L.

The ordinary tobacco of commerce.

42347. *NICOTIANA ANGUSTIFOLIA CRISPA* (Cav.) Comes.

Often referred to *Nicotiana tabacum*, but Comes in his *Monographie du Genre Nicotiana*, p. 51, considers *N. angustifolia* to be a good species.

42348. × *NICOTIANA CALYCIFLORA* Caille.

"The *calyciflora* (Cambridge) will hardly present flowers with petaloid calyx. It presents instead (and by reversion) flowers with purple corolla. This shows that it has been obtained from *Nicotiana purpurea* or *atropurpurea*. In fact, at Fojano della Chiana (Arezzo) the true *calyciflora* has been obtained by mutation of *N. atropurpurea*. Under cultivation it has in 1915 perfectly preserved the character, and I believe it will do so with you." (*Anastasia*.)

42349. *NICOTIANA TRIGONOPHYLLA* Dunal.

"*Nicotiana trigonophylla* is no more or less than *N. rustica*, while it ought to be something entirely different." (*Anastasia*.)

This species has stems 15 inches tall, with leaves that are triangular, sessile, somewhat clasping, about 2 inches long and five-eighths of an inch broad. The corolla is yellowish green, about one-half inch long; viscous pubescent throughout. Found from Utah to Mexico and California. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2144.)

42350. *NICOTIANA UNDULATA* Ruiz and Pavon.

Said to be a variety of *Nicotiana suaveolens* Lehm., with large undulated leaves and flowers larger than that species. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2142.)

42351. *NICOTIANA VISCOSA* Lehm.

"*Nicotiana viscosa* ought to be near *N. langsдорffii* (a *langsдорffii* with large flowers, with the characters of *alata*); instead it is a *rustica* (like *texana*)." (*Anastasia*.)

An annual species 3 feet tall, having pink flowers in July. Originally from Argentina. (Adapted from *Johnson's Gardener's Dictionary*, p. 658.)

42352. *NICOTIANA TABACUM MACROPHYLLA* Dunal.

Received as *Nicotiana latissima* Mill.

42353. *NICOTIANA TABACUM MACROPHYLLA* Dunal.

Received as *Nicotiana macrophylla* Lehm.

"A large-leaved variety with large red flowers, of which there are several horticultural forms." (*Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2144.)

42354. × *NICOTIANA SANDERAE* Hort.

"A viscid-pubescent herbaceous annual, with stems 2 to 3 feet tall, of bushy habit; corolla salverform, the lobes carmine-rose. Originated in 1903 by Sander & Sons, St. Albans, England, as a cross between *Nicotiana alata* and *N. forgetiana*." (*Bailey, Standard Cyclopedic of Horticulture*, vol. 4, p. 2142.)

42355 to 42376.

From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Station of Ivoloïna, near Tamatave, through Mr. James G. Carter, American consul. Received March 31, 1916.

42355. *ADENANTHERA PAVONINA* L. Mimosaceæ. Coral-bean tree.

"A handsome deciduous tree with spreading branches and bipinnate leaves, bearing pods of glossy, scarlet, biconvex seed. Flowers in racemes, numerous, small, white and yellow mixed, fragrant.

"The tree is a native of the East Indies, where the jewelers use the seeds for weights, each weighing almost exactly 4 grains. The heartwood of the larger tree is of a deep red color. It is hard and durable and in India is sometimes used as a substitute for red sandalwood. It yields a dye which the Brahmins of India use for marking their foreheads. It has long been growing in Guam and is pretty well distributed over the island. Its vernacular name [kolales] is an imitation of the 'corales' (coral beans) and is likewise applied to the smaller seeded *Abnus abrus*." (W. E. Safford, *Useful Plants of Guam*, p. 174.)

See S. P. I. Nos. 38650 and 39542 for previous introductions.

42356. *ALBIZZIA CHINENSIS* (Osbeck) Merr. Mimosaceæ.

(*Albizzia stipulata* Boiv.)

A large, deciduous, fast-growing tree of tropical Asia, whose wood is used for cart wheels, wooden bells, cabinet work, and furniture, as well as for fuel; the branches are used for fodder, and the trunk yields a gum which is suitable for sizing paper.

For previous introduction, see S. P. I. No. 39104.

42357. *CAJUPUTI LEUCADENDRA* (Stickm.) Rusby. Myrtacæ. Cajuput.

(*Melaleuca leucadendron* L.)

The cajuput tree of India and Australia. Reaches a height of 80 feet. Can be grown on the edges of salt-water swamps, where no Eucalyptus will survive. Like the Eucalyptus the tree is believed to be valuable for subduing malarial vapors. The lamellar bark is valuable for preserving fruit wrapped in it. The wood is hard, close grained, and almost imperishable underground. The leaves yield as much as 2 per cent of the well-known cajuput oil, closely allied to that of Eucalyptus. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 303.)

✓ 42358. *BICHEA ACUMINATA* (Beauv.) W. F. Wight. Sterculiaceæ.

(*Cola acuminata* Schott and Endl.)

Kola nut.

This is one of the largest and most beautiful trees of the river regions of Senegambia. It grows to a height of 10 to 20 meters, having a large trunk and strong branches, the wood being good for naval construction, carpentry, etc. The leaves are oval-acuminate and alternate, the flowers very numerous, apetalous and polygamous, in paniculate cymes. At 10 years of age the tree comes into full bearing and may yield 45 kilograms of seed twice annually, in November and June. The seeds, often reduced to a large, more or less fleshy embryo, are a clear yellow or rosy red in color. Deprived of their covering, they vary in weight from 5 to 25 grams. Kola is highly prized by all the African tribes, who use it in the fresh state for chewing and in the dry state as a food. Its taste, at first sweetish, is astringent, then bitter. It has the property of making brackish and hot water agreeable and fresh. Like maté and coca, it contains caffen and quiets hunger and allows one to endure the most prolonged labor without fatigue. In

42355 to 42376—Continued.

addition, swallowed after having been chewed or taken as a powder, the kola nut is a valued antidyenteric and is passed among the negroes as a powerful aphrodisiac; native names *Gourou*, *Ngourou*, and *Café du Soudan*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, pp. 343, 805.)

42359. *BICHEA ACUMINATA* (Beauv.) W. F. Wight. Sterculiaceæ.

(*Cola acuminata* Schott and Endl.)

Kola nut.

See S. P. I. No. 42358 for description.

42360. *CANANGIUM ODORATUM* (Lam.) Baill. Annonaceæ. Ilang-ilang.

(*Cananga odorata* Hook. f. and Thoms.)

"This is a handsome tree, symmetrical and stately, reaching a height of 50 feet or more. It has a smooth, hard, grayish bark, resembling that of the beech. It flowers in April and May or perhaps even earlier. The long, straplike, yellowish petals give out a rich, spicy fragrance, somewhat resembling that of cinnamon and very pronounced just after a rain." (*J. E. Conner*.)

See also S. P. I. No. 38652 for previous introduction.

42361. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

See S. P. I. No. 42055 for description.

42362. *CASSIA SIAMEA* Lam. Cæsalpiniaceæ.

A valuable medium-sized tree, having pinnately compound leaves and oblong medium-sized leaflets. It is decidedly ornamental on account of its erect terminal panicles of yellow flowers and elongated flat pods. It is commonly cultivated in the Philippines and has done remarkably well in Cuba. The wood is considered of value for house pillars and in the making of furniture. Native name, *Ong-canh-eh Kmer*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 287, and from the *Catalogue of the Manila City Nursery*.)

42363. *CASTILLA ELASTICA* Cerv. Moraceæ.

Rubber tree.

A lofty, deciduous, native American forest tree of the breadfruit family, growing to a height of 20 meters and over, the young twigs being densely covered with yellowish or grayish hair. Mature leaves rather large, dark green above, paler and velvety beneath. Rubber is obtained in the usual way by tapping the tree and evaporating the moisture from the latex. (See *Contributions from the U. S. National Herbarium*, vol. 13, part 7, 1910, p. 277.)

42364. *CITRUS HYSTRIX* DC. Rutaceæ.

Papeda.

A large, thorny tree, 6 to 12 meters high, having broadly winged leaves 16 to 24 cm. long. Fruits variable, from oblate to pyriform, turbinate or oblong, smooth to more or less corrugate, greenish lemon yellow; rind medium thick, flesh greenish, juicy, sharply acid, aromatic, contained in 12 to 15 locules; seeds, usually many, flat, reticulate. Found in the Malay Archipelago, including the Philippines, to India. (Adapted from *Wester, Citriculture in the Philippines, Bulletin 27, 1913*.)

42365. *LINOMA ALBA* (Bory) O. F. Cook. Phœnicaceæ.

Palm.

A slender, spineless, arecalike palm found in tropical Asia, where it grows to a height of 30 feet or more and a diameter of 8 or 9 inches, dilated at the base. The leaves are 8 to 12 feet long. Branches of the spadix 6 to 18 inches long, erect or slightly reflexed, zigzag when young.

42355 to 42376—Continued.

By far the best of the genus and when young a very desirable pinnate house and table palm deserving to be well known. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1004*, under *Dictyosperma*.)

42366. *EUGENIA PARKERI* Baker. Myrtaceæ.

A Madagascar tree, the wood of which is used for cabinetmaking and the leaves of which have been used with considerable success as an anti-dysenteric. Native names *Marotampona*, *Rotra*, *Varavotra*, and *Voamarintampona*. (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 149*.)

42367. *FUNTUMIA ELASTICA* (Preuss) Stapf. Apocynaceæ.

Lagos rubber tree.

A tall forest tree growing to a height of 100 feet, usually near a stream, and found along the west coast of Africa from the Gold Coast in Ashanti through Lagos and lower Nigeria to the valleys of the Mungo River. The trunk is cylindrical with pale spotted bark; leaves oblong or lance-oblong, undulate; flowers white or yellowish, in short-peduncled, many-flowered, dense cymes. Yields the Lagos caoutchouc. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1305*.)

✓ 42368. *HYPHAENE CORIACEA* Gaertn. Phœnicaceæ.

Palm.

A palm which reaches a height of 2 or 3 meters on the northeast coast of Madagascar, increasing by tufts of four or five leaves and sometimes branching on the main trunk. The leaves show the morphological peculiarity of being a transitional form between the palmate and pinnate leaves of the *Cocos* tribe. The leaves with the petiole are from 1.7 to 1.8 meters long. From the petioles of various palms are drawn fibers known in commerce under the name of piassavas. Perhaps this palm may be included among these piassavas. The filaments which have their origin at the base of the petiole measure 0.8 to 1 mm. in diameter. Besides, in the leaf, the intersegmentary filaments, measuring from 50 to 70 cm. in length, may be employed as thread. However, their resistance and elasticity are less than the coir of the coconut. Native names are *Banty*, *Lokoko*, *Satranamira*, and *Satranatrichy*. (Adapted from *Heckel, Les Plantes Utiles de Madagascar, p. 190, 1910*.)

42369. *INTSIA BIJUGA* (Colebr.) Kuntze. Cæsalpiniaceæ.

(*Afzelia bijuga* A. Gray.)

A leguminous tree described as being from the Fiji Islands, but apparently widely distributed in Oceanica. The leaves are abruptly pinnate, the leaflets mostly in two pairs and ovate. Flowers in small terminal panicles. Pods oblong and flat, 5 to 8 inches long by 2 inches broad, containing compressed-orbicular seeds, 1 inch or more in diameter. Doubtless the source of the *ift* used in Guam as a cabinet wood and for general construction purposes. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, described under Afzelia, vol. 1, p. 229*.)

42370. *LITSEA LAURIFOLIA* (Jacq.) Cordem. Lauraceæ.

(*Litsea sebifera* Pers.)

A timber tree of the laurel family, 15 to 30 feet high, found in Cochin China. The wood is greenish yellow, fine grained and soft, with long straight fiber and very easy to work. It is not easily attacked by insects and lasts well exposed to the air. Found to be good for light carpentry, joinery, and flooring. The leaves and twigs of this tree are

42355 to 42376—Continued.

filled with a glutinous substance which makes water mucilaginous. This is used for inflammation, redness of the skin, and as a remedy for hysteria. The pericarp of the fruit contains a fatty material, a true wax, which is used for making candles that give off a disagreeable odor on burning. Native names, *Cay-loi-nhot* and *Bois d'oiseau*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 533, under *Tetranthera laurifolia*.)

42371. LONCHOCARPUS FORMOSIANUS DC. Fabaceæ.

A much-branched tree from Senegal, 5 to 6 meters tall, covered during the rainy season with magnificent bunches of lilac-colored flowers recalling *Syringa vulgaris* by their color and perfume. The natives make a decoction from the bark and administer it for stomach complaints in children, the tannin it contains probably being the active agent. Native names *Koll* and *Ossani*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 801.)

42372. RAVENALA MADAGASCARIENSIS Sonner. Musaceæ. Traveler's-tree.

The so-called traveler's-tree is a magnificent palmlike tree of the Musaceæ, confined to Madagascar. It grows to a height of 20 to 30 feet, having a palmlike trunk and bananalike leaves of gigantic size, arranged in two rows on opposite sides of the arboreous stem, giving one the impression of an immense fan. The leaves when cut yield an abundance of refreshing juice, with which travelers allay their thirst. The flowers are comparatively small, aggregated in the axils of the leaves. The arillus surrounding the beanlike seeds is of a most beautiful ultramarine color and yields an essential oil. A dye is extracted from the capsules. (Adapted from *Lindley, Treasury of Botany*, vol. 2, p. 1192.)

42373. SPATHODEA CAMPANULATA Beauv. Bignoniaceæ.

A tall, erect, bignoniaceous tree found in western tropical Africa and introduced into Java, Ceylon, and other tropical countries as an ornamental shade tree. It is quite commonly planted about Kandy, Ceylon, where its racemes of scarlet or crimson flowers at the tips of the branches make a strikingly handsome and conspicuous appearance at a distance. The unexpanded flowers retain a quantity of water, and this has led to the name *fountain tree*, by which it is sometimes known. (Adapted from *MacMillan, Tropical Gardening and Planting*, p. 264.)

42374. TECTONA GRANDIS L. f. Verbenaceæ.

Teak.

A large deciduous forest and timber tree, indigenous in both peninsulas of India. The young branches are quadrangular, having opposite leaves and terminal panicles of white flowers, followed by round fruits about the size of cherries, covered with spongy wool and inclosed in a kind of bladder formed of the enlarged calyx. The valuable wood is that chiefly exported from India, more particularly Burma, and is the most important building timber of the country. (See *Watt, Commercial Products of India*, p. 1068, and *Lindley, Treasury of Botany*, vol. 2, p. 1128.)

42375. TRACHYLOBIUM VERRUCOSUM (Gaertn.) Oliver. Cæsalpiniaceæ.

This spineless leguminous tree, found on the islands of Madagascar and Reunion, grows to a height of about 20 feet and has dense clusters of white flowers. It produces a true copal resin, or animé, which is

42355 to 42376—Continued.

used for the manufacture of varnish. The resinous wood is very hard and heavy and lasts very well. The sapwood is the color of oak and the heartwood is suitable for cabinetmaking. Native name *Copalier*. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 531, under *Hymenaea verrucosa*.)

42376. TYPHONODORUM LINDLEYANUM Schott. Araceæ.

This species of aroid is found in Zanzibar, Mauritius, and Madagascar, and, like all of the genus, it grows near the banks of muddy streams or in marshes. The plant measures from 1.5 to 2.5 meters high. All parts give off an irritating juice which causes itching. The Malagasy make an edible starch by drying the grated base of the plant over a slow fire. In spite of the action of the fire, however, this starch causes an itching in the mouth and even in the esophagus. This starch is also considered an excellent remedy against the bites of venomous animals. Certain animals, such as wild boars, are very fond of the entire stalk. From the leaf sheath, the Sakalavas extract a thread which they manufacture into heavy fishlines, and according to Perrier de la Bathie a variety which has reddish and blackish sheaths gives better fibers than the variety which has white sheaths. It is a very easy matter to gently draw out the threads after abruptly breaking the sheath, provided they are pulled out parallel to the axis. Thus obtained, the threads are at first a deep yellow, becoming much lighter with washing. Native names *Viha* and *Vihana*. (Adapted from *Heckel, Les Plantes Utiles de Madagascar*, pp. 254-255, under *T. madagascariensis*.)

42377 to 42380.

From Chefoo, China. Presented by Mr. A. Sugden, customhouse, through Mr. John F. Jewell, American consul, Chefoo. Received March 29, 1916.

42377 and 42378. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.

42377 Small variety. 42378. Large variety.

42379. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Mixed peach stones of various sorts and seasons." (*Sugden*.)

42380. *PRUNUS ARMENIACA* L. Amygdalaceæ. Apricot.

Introduced for breeding experiments.

42381 to 42383.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Received March 21, 1916. Notes by Señor Carrasco.

42381. *BAUHINIA CANDICANS* Benth. Cæsalpiniaceæ.

"*Caoba*. Ornamental tree, with excellent wood, from the temperate region of Argentina."

42382. *CAESALPINIA MELANOCARPA* Griseb. Cæsalpiniaceæ.

"*Guayacan*. A handsome leafy tree, with hard reddish wood, from the temperate region of Argentina."

42383. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

"*San Falso*. A vigorous ornamental tree from the temperate and hot regions of Argentina."

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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1916.

(No. 47; Nos. 42384 to 43012.)



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BUREAU OF PLANT INDUSTRY.

Chief of Bureau, WILLIAM A. TAYLOR.

Associate Chief of Bureau, KARL F. KELLERMAN.

Assistant to Chief, JAMES E. JONES.

Officer in Charge of Publications, J. E. ROCKWELL.

FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge*.

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Field Stations*.

B. T. Galloway, *Plant Pathologist, in Charge of Detention Laboratories*.

Peter Bisset, *Plant Introducer, in Charge of Foreign Plant Distribution*.

Wilson Popenoe and H. L. Shantz, *Agricultural Explorers*.

R. A. Young, *Plant Introducer, in Charge of Dasheen Investigations*.

H. C. Skeels, *Botanist, in Charge of Collections*.

G. P. Van Eseltine, *Assistant Botanist, in Charge of Publications*.

H. E. Allanson, E. L. Crandall, L. G. Hoover, R. N. Jones, and P. G. Russell, *Assistants*.

Robert L. Beagles, *Superintendent, Plant Introduction Field Station, Chico, Calif.*

Edward Simmonds, *Superintendent, Plant Introduction Field Station, Miami, Fla.*

J. E. Morrow, *Superintendent, Yarrow Plant Introduction Field Station, Rockville, Md.*

D. A. Bisset, *Superintendent, Plant Introduction Field Station, Brooksville, Fla.*

Henry E. Juenemann, *Superintendent, Plant Introduction Field Station, Bellingham, Wash.*

E. J. Rankin, *Assistant in Charge, Field Station, Savannah, Ga.*

Edward Goucher, *Plant Propagator*.

Collaborators: Thomas W. Brown, Gizeh, Cairo, Egypt; H. M. Curran, Bahia, Brazil;

M. J. Dorsey, University Farm, St. Paul, Minn.; Robert H. Forbes, Cairo, Egypt;

A. C. Hartless, Seharunpur Botanic Gardens, Scharunpur, India; E. W. D. Holway,

Faribault, Minn.; Barbour Lathrop, Chicago, Ill.; H. L. Lyon, Honolulu, Hawaii;

H. Nehrling, Gotha, Fla.; Charles Simpson, Little River, Fla.; H. P. Stuckey, Experi-

ment, Ga.; Dr. L. Trabut, Director, Service Botanique, Algiers, Algeria; H. N. Whit-

ford, School of Forestry, New Haven, Conn.; E. H. Wilson, Arnold Arboretum, Jamaica

Plain, Mass.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1916 (NO. 47; NOS. 42384 TO 43012).

INTRODUCTORY STATEMENT.

This inventory covers the spring months of the year preceding our entry into the Great War. During those months 40 countries sent freely through their official representatives, or allowed to pass freely, the plant material collected within their borders which this inventory describes. In the light of recent events this fact takes on a new significance. It shows the spirit of free exchange of material of the greatest value which existed before the war, material from which food crops of great importance could be developed. Upon no single species of plant had any nation placed an embargo. It was possible at any time through official requests to secure every courtesy desired and, often without cost, all plant material asked for. The policy, followed by this office for 10 years, of offering to secure free of cost small quantities of plant material of American species may have been in part responsible for the hearty assistance rendered by these representatives of 40 foreign countries. Even the Ameer of Afghanistan, who guarded jealously every avenue of communication with the outside world, sent a shipment of plants as a gift to this Government previous to the war.

This inventory describes collections made by only one representative of the office, Mr. H. M. Curran, who as a collaborator collected, in connection with other work upon which he was engaged in Colombia, seeds of some rare and interesting oil palms and of tropical forest and other economic trees of that country.

Of the material sent in by correspondents, the cerealists will be interested in a collection of South African endemic varieties of wheat (Nos. 42391 to 42426) which Mr. I. B. Pole Evans reports have been cultivated for many years on irrigated lands; and in the Papago sweet corn of Arizona (No. 42642), which may prove valuable for silage in Kansas and Nebraska.

Four good tropical bonavist beans (Nos. 42577 to 42580) from British Guiana, one of which lasts for two years, may interest Florida truck growers; and a relative of the udo from the Himalayas, *Aralia cachemirica* (No. 42607), which is hardy at the Arnold Arboretum,

near Boston, deserves to be tested in comparison with the Japanese vegetable.

A most noteworthy addition is the Grimaldi collection of hybrid grapes, selections of many hundreds of hybrids made by Dr. Clemente Grimaldi between the Italian varieties of the European grape and various American species of *Vitis* (Nos. 42477 to 42519). These were presented by Mr. F. Paulsen, director of the Regio Vivaio di Viti Americane, direct from Palermo. They are presumed to contain some stock varieties and direct producers of exceptional value because of their resistance to drought and to an excessive content of lime in the soil.

The cherimoya has shown itself so well adapted to cultivation in California and Florida and its rapid recovery from frost injury has been so noticeable that five named grafted varieties from Chile (Nos. 42897 to 42901), gifts of Sr. Adolfo Eastman, of San Francisco de Limache, have already attracted considerable attention in those regions where this delicious fruit can be grown.

The roselle jelly plant is a success in Florida and Texas, but too often the crop is cut short by frost. Wester's strain, Temprano, which matures 20 days before the others, may make the growing of this remarkable jelly-producing plant a success farther north (Nos. 42471 to 42475).

The Macadamia is bearing in southern Florida and California, and several people are studying its possibilities. *Macadamia minor* (No. 42468), a smaller species sent in by Mr. J. F. Bailey, should be tested in the same localities.

We are accustomed to connect high protein content with leguminous crops, but in the Capoeira branco, *Solanum bullatum* (No. 42815), which Mr. Benjamin H. Hunnicutt, of Lavras, Brazil, reports is relished by cattle and horses, we have one of the Solanaceæ, the leaves of which, according to analysis, contain 20 to 28 per cent of protein, and the branches 14.06 per cent of protein, dry weight. This is higher in protein than many alfalfas, and it deserves the consideration of forage-crop specialists.

Dr. J. H. Maiden, of Sydney, Australia, proposes the Japanese grass, *Osterdamia matrella* (No. 42389), for culture on swamps and dry flats near the sea and believes it worthy of trial in sand-hill districts or on saline lands near the coast.

It is recognized that bamboo thickets form good grazing grounds for cattle. The switch cane of our Southern States no doubt furnishes a very considerable amount of fodder for southern cattle. In the Andean Cordilleras another bamboo, the canea, *Chusquea quila* (No. 42388), is highly considered as a forage plant and exists in great quantities there, according to Dr. Vereertbrugghen, who has succeeded in obtaining a quantity of seed for trial.

Mr. J. Burt Davy, who has sent in many valuable things from South Africa, submits for trial the seeds of what he believes is a new annual hay grass for wettish lands in the maize belt of the South, especially for alluvial deposits where water is apt to stand during rains. Animals, he reports, are extremely fond of this *Panicum laevifolium* (No. 42608).

The so-called algaroba of Hawaii, introduced by padres into the islands, has been such a valuable forage tree that the Philippine aroma, *Prosopis vidaliana* (No. 42807), which resembles and has until recently been confused with it, merits attention. It is quite distinct, however, having no sweet arillus in the pod; and since it spreads along the sandy coast region and up on the hillsides and is relished by stock it deserves to be naturalized throughout the Tropics.

The importance of vegetable oils has been emphasized by the war, and it is evident that Americans have paid too little attention to the South American wild palms, from the kernels of which excellent oils are obtainable. The Corozo palm, *Elaeis melanococca* (No. 43001), according to Curran, yields an excellent cooking oil and is found in immense numbers on the flooded areas of Colombia, while the cultivation of the Cohune palm, *Attalea cohune* (No. 42707), according to Consul Dyer, of Honduras, is capable of being developed into an important industry there.

Dr. L. Trabut, our collaborator, who has made so many valuable suggestions that we listen to him with unusual interest, proposes *Saccharum biflorum* (No. 42551), a grass of great size much used in Algeria as a screen and in Sicily and on the banks of the Nile as a sand binder, for trial in our Southwestern States.

Besides the strictly economic plants, this inventory includes several striking new ornamentals. S. P. I. Nos. 42435 to 42443 show a collection of tree and shrub seeds from Dr. Fischer de Waldheim and include a rare Turkestan maple, the oriental beech, a Turkestan mountain cherry, a mountain almond, and the most decorative of all the tamarisks. S. P. I. No. 42597, *Cornus capitata*, from the Himalayas, has bracts that are sulphur yellow instead of white in color, like our dogwoods, and bears fruits 2 inches long and fleshy like a strawberry. What might be done in the hybridization of our eastern and western species with this Himalayan dogwood!

Actinidia arguta is such an indispensable porch vine and its foliage is so universally free from disease that the larger leaved *A. callosa henryi* (No. 42683) from central China deserves to be tried in comparison.

M. Vilmorin's new hybrid clematis (No. 42688), a result of crossings between Wilson's *Clematis montana rubens*, one of the loveliest of all climbers but tender, and *C. chrysocoma*, is said to be more vigorous and branching than the former, and it may be hardier.

S. P. I. No. 42691 is the new Chinese *Deutzia longifolia veitchii*, one of the most interesting new flowering shrubs introduced from China, with large beautiful rose-colored flowers, making it especially suitable for parks.

Rose growers will take a particular interest in the remarkable collection of rose species (Nos. 42974 to 42982) from the Arnold Arboretum, which has gathered them from China and Chosen (Korea). This collection represents material of the greatest value for hybridizers and can hardly fail to lead to the origination of many new and lovely hardy roses for America.

Perhaps the most remarkable plant listed, from the botanist's point of view, is the Javanese shrub *Pavetta zimmermanniana* (No. 42767). Its leaves are inhabited by bacterial colonies which induce knots analagous to those formed by *Bacillus radicicola* in the roots of leguminous plants. These knots are apparently essential to the healthy growth of the plant, and the bacterium is universally present in the young seed. This represents a new class of plants whose rôle in our agriculture remains to be further studied.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Mrs. Ethel H. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., February 11, 1919.

INVENTORY.

42384 and 42385. *NEPHELIUM* spp. Sapindaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received April 6, 1916.

42384. *NEPHELIUM LAPPACEUM* L.

Rambutan.

"The rambutan tree grows to a height of about 40 feet, and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being produced on every branch. The compound leaves are made up of oblong-ovate leaflets about 4 inches long by 2 inches wide. In habit of growth the tree appears to be normally rather round-topped and spreading, but as it is frequently planted among other trees, it is forced to grow tall and slender, branching only at a considerable height above the ground. A cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color. The individual fruits are slightly smaller than a hen's egg, but more elongated in form. They are covered with soft spines about half an inch in length and are borne in clusters of about 10 to 12 fruits. The skin is not thick or tough, and to eat the fruit the basal end is torn off, exposing the aril, which, with a slight pressure on the apical end of the fruit, slides into one's mouth. The aril is white, nearly transparent, about one-fourth of an inch thick, and has a mildly sub-acid, somewhat vinous flavor." (*Wilson Popenoe*.)

See S. P. I. No. 34494 for previous introduction.

42385. *NEPHELIUM MUTABILE* Blume.

Pulassan.

"*Pulassan*. A Malayan tree, similar to the rambutan in appearance, but differing in the fruit and in the leaves, which are gray beneath. The fruit is larger than the rambutan, of a deep purple-brown, with short, blunt processes, and, according to Ridley, the flavor is decidedly superior to that of the latter fruit." (*Macmillan, Handbook of Tropical Gardening, 2d ed., p. 176.*)

42386. *CASTILLA NICOYENSIS* O. F. Cook. Moraceæ.

Nicoya rubber.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received April 3, 1916.

A medium-sized tree, 10 to 20 meters high, with deciduous leaves 8 to 18 inches long and 4 to 8 inches broad, bearing inconspicuous flowers and orange-red fruits in a receptacle 2 to 3 inches in diameter. Reported so far only from the peninsula of Nicoya, but the probability is that it will be found all along the Pacific coast from Nicaragua to Panama. It is a good rubber producer, the milk being particularly abundant toward the end of the dry season. Owing to this fact, it is almost exterminated from the western forests of Costa Rica. (Adapted from *Pittier, Contributions from the U. S. National Herbarium vol. 13, p. 275.*)

For previous introduction, see S. P. I. No. 38188.

42387. PSIDIUM GUAJAVA L. Myrtaceæ. Guava.

From Allahabad, India. Presented by Prof. P. H. Edwards, American Presbyterian Mission. Received April 1, 1916.

"*Sufeda* or *Safeda*. White with creamy skin and smooth delicious flesh. This variety is considered the best." (*Edwards*.)

42388. CHUSQUEA QUILA Kunth. Poaceæ. Bamboo.

From Bariloche, Argentina. Presented by Dr. Joseph Vereertbrugghen. Received April 6, 1916.

"*Canca*, the bamboo from this Cordillera. It is difficult to get ripe seed, but at last I believe I have the real stuff, full grown, ripe, and well dried. According to an agricultural paper of Buenos Aires, they have never tried to get this bamboo from seed, but transplanted the roots." (*Vereertbrugghen*.)

42389. OSTERDAMIA MATRELLA (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Sydney, New South Wales, Australia. Presented by Dr. J. H. Maiden, director, Botanic Garden. Received April 1, 1916.

A grass of considerable value on littoral swamps and dry flats near the sea. According to Kirk, it is found sometimes forming a compact turf of dry land and affording a large supply of succulent herbage for horses, cattle, and sheep. Its value, however, in such localities, if bulkier grasses would grow there, must be comparatively little, as, from its close-growing habit, it chokes out all other species. It is evidently much relished by stock, and is worthy of introduction in sand-hill districts near the sea or on saline soil inland. (Abstract from *Maiden, Useful Native Plants of Australia*, p. 112.)

For previous introduction, see S. P. I. No. 34657.

42390 to 42427.

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received April 5, 1916. Quoted notes by Mr. Evans.

"Varieties of wheat commonly grown in South Africa. The seed of these varieties was sown during the winter months as late as August and reaped during the summer months; that is to say, from November to January. They have all been grown under irrigation with the exception of those noted."

42390. HORDEUM INTERMEDIUM CORNUTUM (Schrad.) Harlan. Poaceæ. Barley.

"No. 18. *Barley-wheat*, from Fauresmith."

42391 to 42421. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

42391. "No. 14. *Kolonie Rooi Koren*, from Zastron."

42392. "No. 1. *Early Beard*, from Edenburg, Orange Free State."

42393. "No. 3. *Du Toit's Koren*, from Austens Port."

42394. "No. 4. *Australian wheat*, from Edenburg, Orange Free State."

42395. "No. 5. *Klein Rooi Koren*."

42396. "No. 6. *Defiance*, from Edenburg, Orange Free State."

42397. "No. 7. *Baard Koren*, from Melkbosch, Bethanie district."

42390 to 42427—Continued.

42398. "No. 8. *Red Egyptian* (generally known as *Stromberg Rooi Koren*), from Ligton."
42399. "No. 9. *Transvaal Wol*, from Tagelberg, Bethulie district."
42400. "No. 10. *Talawair*, from Kleinzuurfontein."
42401. "No. 11. *Celliers* or *Cilliers*, from Hammonia, Orange Free State."
42402. "No. 12. *Wit Baard Koren*, from Hammonia, Orange Free State."
42403. "No. 13. *Rustproof*, from Zastron."
42404. "No. 15. *Ou Baard* (late), from Kleinzuurfontein."
42405. "No. 16. *Gluyas* (early)."
42406. "No. 17. *Rooi Kaal Koren*, from Treurfontein, Fauresmith."
42407. "No. 19. *Sibies Koren*, from Fauresmith."
42408. "No. 20. *Klein Koren*, from Bethulie district."
42409. "No. 21. *Wolhuter* wheat."
42410. "No. 60. *Ekstein*, from Holland Posthumus."
42411. "No. 61. Spring wheat, from Holland Posthumus."
42412. "No. 62. *Bob's* wheat, from H. Stubbs, Corunna."
42413. "No. 63. *White Australian* wheat or *Hoffman's*, from H. Stubbs, Corunna."
42414. "No. 67. *Delaware* wheat, from H. J. Joubert, Middelfontein, Bethulie district."
42415. "No. 69. *Primrose*, from Burghersdorp."
42416. "No. 70. Early spring, from Burghersdorp."
42417. "No. 71. *Bosjesveld*, from Burghersdorp."
42418. "No. 77. *Wol Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."
42419. "No. 79. *Geluks Koren* (grown without water), from M. L. Badenhorst, Klipfontein, P. O. Dewetsdorp, Orange Free State."
42420. "No. 80. *Baard Koren* (grown without water), from J. J. Badenhorst, Verliespan, P. O. Dewetsdorp, Orange Free State."
42421. "No. 81. *Rooi Els* wheat, from A. E. Shore, Kalkfontein, P. O. Dewetsdorp, Orange Free State."
- 42422 to 42425. *TRITICUM DURUM* Desf. Poaceæ. **Durum wheat.**
42422. "No. 72. *Media* wheat, from Burghersdorp."
42423. "No. 2. *Blue Beard*, from Klipfontein, P. O. Austens Port."
42424. "No. 74. *Golden Ball*, from W. H. Webster, Vaalbank, P. O. Dewetsdorp, Orange Free State."
42425. "No. 65. *Bengal* wheat or *Zwartbaard*, from P. v. Aardt, Brockpoort."
42426. *TRITICUM TURGIDUM* L. Poaceæ. **Poulard wheat.**
- "No. 66. *Ijzervark*, from H. J. Joubert, Middelfontein, Bethulie district."
42427. *SECALE CEREALE* L. Poaceæ. **Rye.**
- "No. 22."

42428. BERBERIS FREMONTII Torr. Berberidaceæ. Barberry.

From Tucson, Ariz. Presented by Mr. J. J. Thornber, Agricultural Experiment Station. Received April 5, 1916.

Small, unarmed shrub, 5 to 10 feet high, with two or three pairs of somewhat spiny leaflets, the lowest pair close to base of petiole; yellow flowers, and dark-blue ovate berries. Occurring somewhat rarely in canyons from southwestern Colorado to Mexico.

For previous introduction, see S. P. I. No. 41764.

42429. CASSIA ANGUSTIFOLIA Vahl. Cæsalpiniaceæ. Senna.

From Khartum, Sudan, Africa. Presented by Mr. R. Hewison, Department of Agriculture and Forests. Received April 4, 1916.

"Obtained by Mr. Wood, Assistant Director of Forests." (*Hewison.*)

A small shrub, native to Arabia and east Africa and largely cultivated in parts of southern India. It furnishes *Tinnivelly* senna, the best known variety of this medicinal product. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 536.)

For previous introduction, see S. P. I. No. 41282.

42430 to 42434.

From Brazil. Collected by Mr. H. M. Curran.

42430. BASELLA RUBRA L. Basellaceæ. Red basella.

"No. 115. *Berthala*. Cultivated vine, leaf and stem edible, fruits yield purple dye. Barra do Rio Contas, Bahia, Brazil, November, 1915." (*Curran.*)

An annual or biennial herb, cultivated in the Tropics as a potherb. It is remarkably variable, and several forms have been described under different specific names. It has bisexual white, red, or violet flowers. The form usually considered as *Basella rubra* is said to yield a rich purple dye, but it is difficult to fix. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 455.)

42431. ERYTHROXYLON sp. Erythroxylaceæ.

"No. 40."

42432. HELICTERES OVATA Lam. Sterculiaceæ. Rosca.

"No. 345."

A small tree or shrub with simple ovate leaves and flowers in small axillary clusters. The wood is utilized for posts and fuel, and the bark furnishes material for the manufacture of paper; the roots are used medicinally. (Adapted from *Correa, Flora do Brazil*, p. 64.)

For previous introduction, see S. P. I. No. 36706.

42433. MIMOSA sp. Mimosaceæ.

"No. 79."

42434. SCHIZOLOBIUM PARAHYBUM (Vell.) Blake. Cæsalpiniaceæ. Bacarubú.

(*S. excelsum* Vog.)

"No. 13."

42430 to 42434—Continued.

A very large, quick-growing tree, with fine feathery leaves. Native to Brazil. The flowers, of a bright yellow color, are borne in large, erect racemes in February or March when the tree is bare of leaves. The flowers are at once followed by beautiful, young, feathery foliage. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 300.)

42435 to 42443.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received April 6, 1916.

42435. ACER GINNALA SEMENOVII (Regel and Herd.) Pax. Aceraceæ.

Maple.

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A graceful shrub of bushy habit, with glossy, dark-green, deeply 3 to 5 cut leaves and long peduncled panicles of rather fragrant yellowish flowers. The foliage turns a beautiful red in late summer. It is reported hardier than any of the Japanese maples. Native to Russia. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 200.)

For previous introduction, see S. P. I. No. 34784.

42436. ACER TRAUTVETTERI Medw. Aceraceæ.

Maple.

"Collected by J. W. Palibin in the Caucasus in 1914."

A tree up to 50 feet in height and 6 feet in girth of trunk, with smooth branches and deeply five-lobed leaves, 4 to 8 inches wide, and about three-fourths as long, dark, lustrous green, smooth above, somewhat paler beneath. It is a handsome foliage tree, native of the Caucasus and Persia, and is distinguished in spring by its brilliant crimson bud scales. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 160.)

For previous introduction, see S. P. I. No. 32975.

42437. CARPINUS ORIENTALIS Mill. Betulaceæ. Oriental hornbeam.

"Collected by J. W. Palibin in the Caucasus in 1914."

A small tree or large shrub with small ovate leaves up to 2 inches long and 1 inch wide, dark glossy green above. Native to southeastern Europe and Asia Minor. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 296.)

42438. FAGUS ORIENTALIS Lipsky. Fagaceæ.

Beech.

"Collected by J. W. Palibin in the Caucasus in 1914."

A large perennial tree with elliptic or oblong nearly entire leaves. Native from Asia Minor to northern Persia. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 3, p. 1203.)

For previous introduction, see S. P. I. No. 27662.

42439. PRUNUS PROSTRATA Labill. Amygdalaceæ. Mountain cherry.

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A deciduous shrub 2 to 3 feet high, of low, spreading habit, measuring much more in width than it does in height. Flowers one-half to three-fourths of an inch across, produced singly or in pairs. Petals of a lively rose color. Fruit red, one-third of an inch long. Native of the mountains of the Levant, where it usually makes a close, stunted bush, very unlike the rather free-growing plant seen in this country. It needs a

42435 to 42443—Continued.

sunny position, and is admirably suited on some roomy shelf in the rock garden fully exposed to the sun. In such a position, following a hot summer, it flowers profusely enough to almost hide its branches. It is perfectly hardy at Kew. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 248.)

For previous introduction, see S. P. I. No. 40815.

42440. *PRUNUS SPINOSISSIMA* (Bunge) Franch. Amygdalaceæ.

Wild almond.

"Collected by Miss Zinaida ab Minkwitz in Turkestan in 1914."

A wild, shrubby almond found between stony débris in the hot and dry mountain regions of Russian Turkestan. May be experimented with for the following purposes: As a drought-resistant stock for almonds and peaches, as a possible drought-resistant nut tree, as an ornamental tree or hedge plant in desert regions, and as hybridization material. (Adapted from *F. N. Meyer. See Inventory 31, p. 13.*)

For previous introduction, see S. P. I. No. 33312.

42441. *TAMARIX FLORIDA ALBIFLORA* Bunge. Tamaricaceæ. Tamarisk.

A leafless shrub with pale reddish purple bark, graceful green twigs, and white flowers. (See *Bunge, Tentamen Generis Tamaricum*, p. 38.)

42442. *TAMARIX KARELINI HIRTA* Litv. Tamaricaceæ.

Tamarisk.

A glaucous *Tamarix*, with purplish brown bark, stiff branchlets, and intense purple flowers. (See *Bunge, Tentamen Generis Tamaricum*, p. 68.)

For previous introduction, see S. P. I. No. 39627.

42443. *TAMARIX PENTANDRA* Pall. Tamaricaceæ.

Tamarisk.

Received as *Tamarix pallasii* Desv., var. *macrostachys* Bunge.

"This shrub or small tree is one of the most decorative tamarisks in cultivation, flowering in great profusion in July and August. In the wild state it ranges from the Balkan Peninsula through southern Russia to Turkestan and from Asia Minor to Persia, adorning the banks of rivers, particularly in their lower reaches and estuaries. Like other species of this genus, it thrives well in saline soils, but is by no means dependent on a more than ordinary amount of salts in the ground. The flowers are usually rose colored, but sometimes white or nearly so." (*Curtis's Botanical Magazine*, pl. 8138.)

For previous introduction, see S. P. I. No. 39692.

42444 to 42448. *MESEMBRYANTHEMUM* spp. Aizoaceæ.

Fig marigold.

From San Francisco, Calif. Presented by Mr. John McLaren, Golden Gate Park. Received April 12, 1916. Plants of the following:

42444. *MESEMBRYANTHEMUM AEQUILATERALE* Haw.

A succulent plant with stems several feet in length and thick fleshy leaves, spreading out over the ground in large mats and growing luxuriantly on dry barren rocky places and sandy plains. Flowers are fragrant and showy, of a bright rose-purple color, and about 2 inches across. This species is native to Australia, Tasmania, Chile, and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2041.)

42444 to 42448—Continued.

42445. MESEMBRYANTHEMUM BICOLOR L.

Shrub 2 to 3 feet high, having straight, upright, stiff twigs with grayish brown bark. Leaves on the long shoots scattered, only clustered on the short shoots, about as long as the internodes. Flowers in twos, or only one, about $3\frac{1}{2}$ cm. broad, yellow within and crimson on the outside. A native of Cape Colony on the sandy plains near Cape Town. (Adapted from *Alwyn Berger's Mesembrianthemmen*, p. 152.)

42446. MESEMBRYANTHEMUM FLORIBUNDUM Haw.

Ice plant.

A succulent plant, tortuous in growth, with branches not over 6 inches long, and more or less decumbent; leaves less than 1 inch long, very narrow, terete, curved, obtuse, a little thicker toward the apex; stems and leaves bearing glittering papillæ; stems bristly; flowers small, rose colored, the petals being twice as long as the calyx. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2043.)

42447. MESEMBRYANTHEMUM PUGIONIFORME L.

Stems upright, 15 to 30 cm. long and 1 to 2 cm. in diameter, simple, rarely branched, with rough brownish green bark. Leaves in thick tufted rosettes, standing upright and incurved, the older bent back, 15 to 20 cm. long, linear, sword shaped, long pointed. Flowering stems rising laterally from the leafy rosettes, soon dying, distinctly leaved, one to three flowers. Flowers up to 7 cm. broad, open in the afternoon, malodorous. Native to Cape Colony. (Adapted from *Alwyn Berger's Mesembrianthemmen*, p. 217.)

42448. MESEMBRYANTHEMUM SPECTABILE Haw.

A succulent plant with prostrate stems but ascending branches; leaves 2 to 3 inches long, crowded, glaucous, incurved and spreading, triquetrous with equal sides, attenuate and mucronate; flowers purplish, petals 1 inch long, the inner ones somewhat shorter. Grows on dry, barren, rocky places and dry sandy plains. Native to Cape Colony regions. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2042.)

42449. SPIRAEA WILSONI Duthie. Rosaceæ.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received April 5, 1916.

"*Spiraea wilsoni* is closely allied to, perhaps only a variety of, *S. henryi*. It is distinguished, among other points, by its smooth ovary and smooth or slightly silky flower stalks. Leaves of flowering shoots entire, downy above, duller green." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 535.)

For previous introduction, see S. P. I. No. 37611.

42450. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Glenwood, Hawaii. Tubers presented by Mr. J. B. Thompson, superintendent, Glenwood substation. Received April 11, 1916.

"*Kuoho*. An upland taro. This variety was grown quite commonly around Hilo at the time of my visit to Hawaii in 1913 and was considered to be one of the best. The corms and tubers are very acrid in the raw state and require longer cooking to destroy the acidity than is necessary to cook them to a soft, mealy condition. The quality is good when the taro is thoroughly cooked." (R. A. Young.)

42451. ZEA MAYS L. Poaceæ.**Corn.**

From Salmon Arm, Canada. Presented by Mr. Thomas A. Sharpe. Received April 10, 1916.

"Seed of a very fair flint corn which has ripened here for two years, from seed received from the Agricultural College at St. Anne, Province of Quebec." (Sharpe.)

42452 and 42453.

From Zacuapam, Huatusco, Mexico. Presented by Dr. C. A. Purpus. Received April 12, 1916.

42452. CACARA EROSA (L.) Kuntze. Fabaceæ.**Yam-bean.**

(*Pachyrhizus angulatus* Rich.)

"The young root is much like a turnip in shape and consistency and is easily peeled like a turnip. It is usually eaten raw and may be prepared with oil and vinegar in the form of a salad. According to Dr. Edward Palmer it is extensively cultivated in Mexico, where the natives pinch off the blossoms and seed pods, giving as a reason that if the seeds are allowed to mature the roots are not good. In Mexico the roots are much eaten raw, but are also pickled, boiled in soup, and cooked as a vegetable. As they come from the ground they are crisp, sweet, juicy, and of a nutty flavor. They are nourishing and at the same time quench the thirst, so that they are much liked by travelers. One way of preparing the raw roots is to cut them in thin slices and sprinkle sugar over them. They may also be boiled and prepared with batter in the form of fritters, and in Mexico they are often minced or grated and, with the addition of sugar, milk, eggs, and a few fig leaves for flavoring, made into puddings." (W. E. Safford.)

For previous introduction, see S. P. I. No. 22971.

42453. GOSSYPIMUM sp. Malvaceæ.**Cotton.**

"Raised from seed from Oaxaca, dry country without irrigation." (Purpus.)

42454. CICER ARIETINUM L. Fabaceæ.**Chick-pea.**

From Malaga, Spain. Presented by Mr. Thomas R. Geary, American vice consul. Received April 5, 1916.

"Seeds of the most productive variety in this district." (Geary.)

"*Hamus, gram, garbanzo.* An annual plant growing from 12 to 18 inches in height, cultivated extensively in India, southern Europe, and Mexico. The seeds, two to three, which resemble somewhat the pea, are borne in short pods. They are used as an article of food, parched or toasted, and also ground into a meal that in many respects resembles corn meal. This plant is especially well adapted for cultivation in our semiarid States." (Peter Bisset.)

"In Jerusalem chick-peas are eaten prepared in the following way: The dry chick-pea is put in an earthen jar with water; the cover is then cemented on with dough or cement, and the whole jar placed in the furnace of a Turkish bath and covered with ashes. It is usually kept in the furnace from 4 o'clock in the afternoon until the next morning. This method of cooking the chick-pea is better than boiling. When the peas are done they are manipulated with the fingers until all the outside skin comes off; they are then put in a bowl



THE ARRACACHA, A FAVORITE VEGETABLE OF THE VENEZUELANS, WHICH APPEARS TO BE ADAPTED TO THE WARMER PARTS OF THE UNITED STATES. (ARRACACIA XANTHORRHIZA BANC., S. P. I. No. 42455.)

The whole root is tender and edible. It is generally boiled and mashed like the potato or used in soups like parsnips, to which it is closely allied, but is more delicate in flavor than either. The clump shown is two seasons old, but clumps of a similar size are produced in a single season. The plant has flowered in Florida this season for the first time. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 25, 1918; P24598FS.)



BERMUDA ARROWROOT, A STARCH PRODUCER OF IMPORTANCE. (MARANTA ARUNDINACEA L., S. P. I. No. 42463.)

A single clump of arrowroot. The rootstocks are said to contain from 15 to 25 per cent of a starch that is considered to be very easily digested and is generally recommended for invalids who find difficulty in digesting other starches. The yield is estimated at from 1,600 to 2,000 pounds of starch to the acre. A considerable arrowroot industry exists in Bermuda and St. Vincent. The exports from the latter island amounted to over \$100,000 in 1916. The possibilities of its culture in parts of Florida are being investigated. They are largely questions of yield and labor. (Photographed by David Fairchild at the Plant Introduction Field Station, Brooksville, Fla., Nov. 20, 1918; P24644FS.)

and mashed until they become quite creamy, adding, if necessary, a small quantity of the water in which they are cooked. This creamy substance is then usually flavored with a little garlic and salt; and melted butter, into which pine seeds are thrown and browned, is added. This is eaten as a breakfast food with fresh bread, the bread being dipped in the 'cream.' The 'cream' is also eaten with green and red peppers and radishes. The native name for this 'cream' is *hummus-indamas*. In Jaffa horse beans are prepared in the same way. Olive oil, which is cheaper than butter, is used to some extent instead of butter in Egypt and also in Jaffa." (*Whiting*.)

42455. ARRACACIA XANTHORRIZA Bancroft. Apiaceæ.

Arracacha.

From La Guaira, Venezuela. Roots presented by Mr. Homer Brett, American consul. Received April 12, 1916.

An umbelliferous plant, native of the South American Andes, growing only at heights of 4,000 feet and upward. The plant is a biennial and develops a large yellowish root the size of the common beet, or perhaps larger. The growing plants resemble celery, and the Spanish name *apio*, meaning celery, is often applied to it for this reason. The large fleshy root is developed in the first year and, being edible, is used before the tall flower stem appears. This root is eaten boiled, like parsnips, or sliced raw and fried, like potatoes, being very palatable either way. A good alcohol may be made from the juice of the root. For propagation, cuttings are made with a couple of inches of the fleshy root attached, the fleshy end being placed about 2 inches deep in the top of the hill. The plant requires rain or irrigation at least every month, and as it grows the earth is hilled up, care being exercised not to heap the earth against the trunk of the plant. (Adapted from *Handbook of Venezuela, Bureau of American Republics, 1904*.)

For an illustration of the arracacha plant, see Plate I.

42456 to 42458. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Jerez de la Frontera, Spain. Presented by Mr. Paul H. Foster, American consul. Received April 5, 1916. Descriptive notes by Mr. Foster.

42456. "*Garbanzo de Castilla*. This is the largest and finest sort produced in Spain, but the yield is not so heavy as of the other varieties."

42457. "*Garbanzo del Pais*. Smaller in size and not so tender as that of Castilla [S. P. I. No. 42456], but locally it produces fair quantities under semiarid conditions."

42458. "*Garbanzo Negro*, or black chick-pea. Produces well under semiarid conditions. Used locally for stock feed, as a rule; but the poorer classes of peasants in the country use it for food when other sorts are scarce and high priced. Said to be very nourishing and fattening when used for stock feeding. This sample was kindly furnished me by Mr. Walter J. Buck, H. B. M. vice consul."

42459 to 42462. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Madrid, Spain. Presented by Mr. Robertson Honey, American consul. Received April 5, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42459. Variety A.

42461. Variety C.

42460. Variety B.

42462. (Mixed when received.)

42463. MARANTA ARUNDINACEA L. Marantaceæ. Arrowroot.

From Kingston, Jamaica. Tubers presented by Mr. W. Harris, superintendent, Hope Gardens. Received April 15, 1916.

"The true arrowroot is a native of tropical America. The arrowroot is a perennial herb with large lanceolate leaves and white rootstocks or rhizomes 1 to 2 feet in length and 1 to 2 inches in diameter. The plant is propagated by divisions of the rhizomes in rows 3 feet apart and 1 foot apart in the row. The tubers may be harvested about 8 to 12 months from the time of planting. A good yield of arrowroot is 5 tons of tubers per acre. The tubers contain 25 per cent starch. The yield of prepared arrowroot per acre is about 1,500 pounds. Arrowroot starch may be obtained by grating, washing, and straining the tubers by the method used with cassava. Like cassava, also, the plant seems to exhaust the soil quickly, thus making necessary a system of rotation. The best quality of arrowroot comes from Bermuda, but the largest supply is received from St. Vincent, Barbados, and Ceylon. Arrowroot starch is considered to be very easily digested and is generally recommended for invalids who have found difficulty in digesting the starch from potatoes and other plants." (*Wilcox, Tropical Agriculture, p. 151.*)

For an illustration of the Bermuda arrowroot plant, see Plate II.

42464 to 42469.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, Botanic Gardens. Received April 4, 1916.

42464. CAREYA AUSTRALIS (Benth.) F. Muell. Lecythidaceæ.

A large tree with alternate undotted leaves, large red flowers, and globular, fleshy, edible fruit with a hard rind. The bark is made into twine, and the wood, which is of a light-gray color, red in the center, close in grain, and tough, is easily worked. (Adapted from *Bailey, Queensland Flora, p. 667.*)

42465. EREMOCITRUS GLAUCA (Lindl.) Swingle. Rutaceæ. Australian desert kumquat.

An edible-fruited shrub or small tree, occurring in Queensland, and New South Wales in subtropical regions subject to severe cold and extreme drought. Small, emarginated leaves, subglobose, flattened, or slightly pyriform fruits; small seeds. An 'ade is made from the juice, and the fruits are good for making jam or pickles. It is the hardiest evergreen citrus fruit known and the only one showing pronounced drought-resistant adaptations. (For fuller description, see *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1127.*)

42466. ERYTHRINA VESPERTILIO Benth. Fabaceæ. Coral tree.

A soft-wooded tree found in Queensland and in North, South, and Western Australia, growing to a height of 30 to 40 feet, with a diameter of 1 to 2 feet. The wood is used by the aborigines for making their "hielamans," or shields, being exceedingly light and spongy. Might possibly be used for making floats for fishing nets. Called *hielaman* tree or batwing coral. (Adapted from *Maiden, Useful Plants of Australia, p. 426.*)

42467. EUCALYPTUS MINIATA A. Cunn. Myrtaceæ.

A moderate-sized or large tree, the bark fibrous and persistent, but readily separable in flakes, the young shoots sometimes glaucous or mealy white. Leaves ovate-lanceolate or lanceolate, acuminate, mostly

42464 to 42469—Continued.

4 to 6 inches long. Peduncles axillary or lateral, very thick and broad, more or less flattened, one-half to 1 inch long, with about five to seven rather large closely sessile flowers. Stamens richly colored, nearly half an inch long, inflected in the bud; anthers oblong with distinct parallel cells. Ovary short, flat topped. Fruit ovoid or urceolate, very thick and hard, more or less prominently ribbed, 1 to nearly 2 inches long, the rim rather thick, the capsule deeply sunk. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 228.*)

42468. *MACADAMIA MINOR* F. M. Bailey. Proteaceæ.

A large shrub or small tree with slender branches; three-parted leaves, often crowded at the end of the branches; and nuts about seven-eighths of an inch long and three-fourths of an inch in diameter. A native of Queensland. (Adapted from *F. M. Bailey, Queensland Agricultural Journal, vol. 25, p. 11, 1910.*)

42469. *SYNCARPIA HILLII* F. M. Bailey. Myrtaceæ. Turpentine tree.

A myrtaceous tree from Frazer's Island, North Queensland, having wood of a dark-pink color, close grained, and tough, being useful for building purposes. (Adapted from *Bailey, Proceedings of the Royal Society of Queensland, vol. 1, p. 86, and Maiden, Useful Native Plants of Australia, p. 602.*)

42470 to 42475.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received April 8, 1916.

42470. *UVARIA RUFA* (Dunal) Blume. Annonaceæ.

"*Banauac; Susong calabao.* Fruits of this species are oblong, reniform, 3 sometimes 4 centimeters in length, in bunches of 18 to 20, averaging 115 grams in weight; surface bright red, velvety, ferruginous pubescent; skin thin, brittle; flesh scant, whitish, juicy, aromatic, subacid, without a trace of sugar; quality rather poor; seeds many. Season, September." (*Wester, Philippine Agricultural Review, p. 321, July, 1913.*)

For previous introduction, see S. P. I. No. 34522.

42471 to 42475. *HIBISCUS SABDARIFFA* L. Malvaceæ. Roselle.

42471. "*Rico.* The young plants of the Rico retain their unifoliate leaf characters longer than the *Victor* [S. P. I. No. 42473], and later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The calyx is of about the same length as the *Victor*, but of greater equatorial diameter; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved. The *Rico* has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 at the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett." (*Wester, Philippine Agricultural Review, p. 126, March, 1912.*)

42470 to 42475—Continued.

42472. "*Archer*. Plant robust, frequently exceeding 1.6 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those in the red types; eye yellowish; pollen pale yellow, stigma green; full-grown calyx greenish white, sparsely covered with short, stiff bristles; average length of calyx, 45 millimeters; width, 26 millimeters; including epicalyx, 32 millimeters. The *Archer* is very prolific, and the fruit is somewhat less acid than those of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety that is said to resemble champagne in taste and appearance. Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested in the Lamao experiment station the same year. It has been named in honor of Mr. Archer, with whom the writer has had the privilege of being in correspondence for many years and who has greatly assisted the Bureau of Agriculture in the introduction of many useful and decorative tropical American plants. The green type of roselle, to which the *Archer* belongs, was described as *Hibiscus digitatus* by Cavanilles in 1790, but it is now considered to be a form of *H. sabdariffa* L." (Wester, *Philippine Agricultural Review*, p. 268, June, 1914.)

42473. "*Victor*. This variety is distinguished by having the unifoliate leaves of the young plant change early into leaves deeply five lobed, these leaf characters remaining until the flowering period, when the leaves become three parted or again unifoliate. The stems and calyces are reddish. The calyces average about 45 to 50 millimeters in length and 28 millimeters in equatorial diameter, tapering toward the apex; the calyx lobes are frequently convolute, and the fleshy spines subtending the calyx lobes are longer and more slender than in the *Rico* [S. P. I. No. 42471] and are curved upward. The *Victor* is more upright in habit than the *Rico* and somewhat earlier in fruiting, due probably to its having been cultivated in Florida for several years." (Wester, *Philippine Agricultural Review*, p. 126, March, 1912.)

For illustrations of the roselle plant and fruits, see Plates III and IV.

42474. "*Temprano*. Plant of medium vigor and upright growth, branching profusely, rarely exceeding 1.25 meters in height; stems light red; leaves palmately five lobate, with conspicuously narrow lobes; flowers normal; pollen golden brown; calyx of the same general form as that of the *Victor* [S. P. I. No. 42473], but smaller; average length, 45 mm., width, 25 mm., with epicalyx, 39 mm. The variety is prolific and the fruiting season is 20 days earlier than *Victor* and *Rico*. When the *Victor* fruited for the first time at Lamao in 1911, one plant was conspicuous for its earliness, and the seed was saved from this plant and sown the following year. The early trait of the parent tree was transmitted to the progeny, and the earliest plant was again isolated and the seed sown in 1913. In harvesting the fruit and seed of the third generation, the early habit and other characteristics that distinguish this new strain



A ROSELLE PLANT IN FLOWER AND FRUIT. (*HIBISCUS SABDARIFFA* L., S. P. I. No. 42473.)

Although the roselle is an all-round producer, the leaves being used for boiled greens in Hawaii and in curries in India, the seed being commonly used as poultry feed, and the bark having been used extensively in India for its fiber, its chief value at present seems to be in the use of the fleshy calyxes for making a delicious jelly or sauce. Its large yellow flowers and deep crimson stems and flower buds make it a striking shrubby perennial worthy a place in southern gardens. (See Plate IV.) (Photographed by R. A. Young at the Plant Introduction Field Station, Brooksville, Fla., Nov. 18, 1918; P24405FS.)



A BASKETFUL OF PREMIER JELLY PRODUCERS, FRUITS OF THE ROSELLE PLANT. (HIBISCUS SABDARIFFA L., S. P. I. No. 42473.)

Only a part of the fruit is used, the thick fleshy calyx, the juice of which has a beautiful wine-red color and makes an excellent jelly or jam with a flavor somewhat resembling that of the cranberry, but which is perhaps more delicate. (Photographed by E. C. Crandall in the photographic laboratory Dec. 9, 1916; P20139FS.)

42470 to 42475—Continued.

from its parent, the *Victor*, seem to be sufficiently well fixed to merit its recognition as a separate variety, and it has been named *Temprano* on account of its early habit. The *Temprano* is more subject to leaf-blight than any of the varieties mentioned in this paper; and therefore, on account of its deficiency in vigor, it is not recommended for planting on a large scale. In fact, the *Temprano* is of more value in a subtropical than a tropical country, where early frosts at the approach of the cold season destroy the ordinary varieties before their fruiting season is over." (*Wester, Philippine Agricultural Review*, p. 267, June, 1914.)

42475. "*Hybrid*."

42476. *RUBUS* sp. Rosaceæ.

From Mobile, Ala. Plants presented by Mr. G. R. McKenzie, landscape gardener. Received April 17, 1916.

"*Family Delight*. Pink berry bush. This berry was found in the woods near Citronelle, Ala. I think it is a cross between the raspberry and blackberry. It makes a good hedge; a hedge 50 feet long planted in the fall of 1910 is 9 feet high and gives us from 2 to 5 quarts of berries a day for about six weeks. My family like the berries much better than they do strawberries. It makes the finest kind of jelly and jam, and as a fresh fruit it is hard to beat." (*McKenzie*.)

42477 to 42519. *VITIS* spp. Vitaceæ.

Grape.

From Palermo, Italy. Cuttings received through Mr. F. Paulsen, director, Regio Vivaio di Viti Americane, at the request of the Superior Minister of Agriculture, April 14, 1916. Quoted notes from Dr. Grimaldi, in *La Viticoltura Moderna*.

In 1904, Dr. Clemente Grimaldi wrote concerning his work on the hybridization of grapes: "Notwithstanding the labors given for almost 15 years to hybridization, I have believed that I should maintain the utmost reserve in publishing the hybrids, and until now I have made known only six, all stocks, which are the following: Nos. 50, 88, 125, 791, 110, and 323." Later in the same article he wrote: "Among the hybrids obtained by me the following at present give me the hope that they will be of service as direct producers," and he lists Nos. 88, 97, 317, 953, 1075, and 1132.

These hybrids were requested at the suggestion of Dr. Gustav Eisen, and they represent some of the best results obtained from the hybridization of American species of *Vitis* with *Vitis vinifera* strains of Italian origin for the purpose of securing varieties resistant to *Peronospora* and other diseases. Of the Ruggeri and Paulsen hybrids descriptions have not been accessible, but have probably appeared in later volumes of *La Viticoltura Moderna*.

42477. "Paulsen hybrid No. 2 A (*Riparia* × *Rupestris*)."

42478. "Ruggeri hybrid No. 19."

42479. "Grimaldi hybrid No. 88."

"*Calabrian* × *Rupestris* Ganzin (published in 1889). Extremely vigorous, fertile, with the appearance of *Rupestris*; shoots very large, short and branched. Adaptability to lime similar to Grimaldi hybrid No. 50 (*Calabrian* × *Azemar*), as shown by its behavior in the lime plat (oasi

42477 to 42519—Continued.

calcare) of the experiment station; very drought resistant. Produces abundant and good red grapes." (*La Viticoltura Moderna*, vol. 10, p. 274, 1904.)

"Fruiting abundantly when adult; medium bunches with medium seed, not very compact. Grapes sweet, maturing early." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

"Grimaldi hybrid No. 88 selected."

"*Calabrian* × *Rupestris Ganzin*. Red grapes. Most vigorous and very fruitful; bunches crowded, winged, 18 cm. in length, blooming twice, seeds round, diameter 14 mm.; pulp white, sweet, skin lightly colored red, early maturing." (*La Viticoltura Moderna*, vol. 14, p. 145, 1907.)

This number consists of two varieties, Nos. 88 and 88 selected, which were mixed by mistake.

42480. "Grimaldi hybrid No. 97."

"*Calabrian* × *Rupestris Ganzin*. Red grapes. Very vigorous and productive when full grown; bunches medium, not very compact, seeds small. Grapes sweet, maturing late." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

42481. "Grimaldi hybrid No. 110."

"*Calabrian* × *Rupestris Ganzin* (published in 1902). Very vigorous and a very rapid grower. Bunches not very numerous, small, somewhat winged, with few seeds." (For full description and plate, see *La Viticoltura Moderna*, vol. 11, pp. 167-170, 1904.)

42482. "Ruggeri hybrid No. 193. *Berlandieri* × *Riparia*."

42483. "No. 125."

42484. "Ruggeri hybrid No. 140."

"*Berlandieri* × *Rupestris du Lot*. Affinity complete, vegetation vigorous, production normal." (*La Viticoltura Moderna*, vol. 15, p. 108, 1909.)

42485. "Ruggeri hybrid No. 188. *Berlandieri* × *Riparia*."

42486. "Ruggeri hybrid No. 199. *Berlandieri* × *Riparia*. Affinity complete, vegetation vigorous, productivity most abundant. Takes the graft in a marvelous manner."

42487. "Ruggeri hybrid No. 225. *Berlandieri* × *Riparia*."

42488. "Ruggeri hybrid No. 267. *Berlandieri* × *Riparia*."

42489. "Ruggeri hybrid No. 300. *Berlandieri* × *Riparia*."

42490. "Grimaldi hybrid No. 317. *Frappato* × *Rupestris Ganzin*. White grapes; very vigorous, moderate bearer, bunches medium, somewhat few seeded, seeds medium, grapes very sweet, maturing late." (*La Viticoltura Moderna*, vol. 10, p. 276, 1904.)

42491. "Grimaldi hybrid No. 323. *Frappato* × *Rupestris Ganzin* (published in 1902). I decided to publish these two hybrids (Nos. 110 and 323) because of their excellent quality, their affinity with our variety, and their very great vigor. Their resistance to drought is extremely high. The resistance to chlorosis in both is scarcely inferior to that of the first three hybrids (Nos. 50, 88, and 125)." (*La Viticoltura Moderna*, vol. 10, p. 275, 1904.)

42477 to 42519—Continued.

42492. "Grimaldi hybrid No. 480."
42493. "Grimaldi hybrid No. 533."
42494. "Grimaldi hybrid No. 722. *Berlandieri* × *Tremano*. Seed of 1904. It is characterized by its vigor and by the precocity of its development, and has all the other merits of Nos. 446 and 528." (*La Viticoltura Moderna*, vol. 14, p. 144, 1907.)
42495. "Paulsen hybrid No. 737."
42496. "Paulsen hybrid No. 764."
42497. "Paulsen hybrid No. 779."
42498. "Paulsen hybrid No. 882."
42499. "Grimaldi hybrid No. 791. *Calabrian* × *Riparia Rupestris* 3309 (published in 1901). The marvelous vigor, superior to that of all the other hybrids, decided me to publish it. It resists drought and has the best of all the other requisites, affinity with our variety, propagation by cuttings, precocity of development, etc. Endures up to 55 per cent of lime in dry soils." (*La Viticoltura Moderna*, vol. 10, p. 275, 1904. For fuller description and plate, see the same periodical, vol. 12, pp. 169-171, January, 1906.)
42500. "Paulsen hybrid No. 810."
42501. "Paulsen hybrid No. 877."
42502. "Grimaldi hybrid No. 934. *Calabrian* × *Aramon Rupestris Ganzin*. Of medium vigor, abundantly fruitful. Seeds with skin dark reddish; without foxiness (foxé), medium maturity." (*La Viticoltura Moderna*, vol. 12, p. 334, 1906.)
42503. "Grimaldi hybrid No. 935. *Calabrian* × *Aramon Rupestris Ganzin*. Most vigorous, fruiting very abundantly. Seeds with skin dark reddish; without foxiness (foxé), early maturity." (*La Viticoltura Moderna*, vol. 12, p. 334, 1906.)
42504. "Grimaldi hybrid No. 940. *Calabrian* × *Aramon Rupestris Ganzin*. White grapes; of medium vigor and very fruitful, bunches very large, somewhat few seeded, the seeds large, oval; grapes very sweet, maturity a little late." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)
42505. "Grimaldi hybrid No. 953. *Calabrian* × *Aramon Rupestris Ganzin*. White grapes; very vigorous and most fruitful, bunches large and seeds large; grapes very sweet, maturing medium." (For full description and illustration, see *La Viticoltura Moderna*, vol. 17, pp. 137-154, 1910.)
42506. "Paulsen hybrid No. 1045."
42507. "Paulsen hybrid No. 1043."
42508. "Grimaldi hybrid No. 1075. *Frappato* × *Aramon Rupestris Ganzin*. Red grapes; of medium vigor and fruitfulness, bunches medium, with large compact seeds; grapes sweet, maturing early." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)
42509. "Paulsen hybrid No. 1103."
42510. "Grimaldi hybrid No. 1132. *Uva di Troya* × *Rupestris Ganzin*. Red grapes. Very vigorous and fruitful, bunches medium, moderately compact, with rather large seeds; grapes sweet and almost free from foxiness; maturity medium." (*La Viticoltura Moderna*, vol. 10, p. 277, 1904.)

42477 to 42519—Continued.

42511. "Paulsen hybrid No. 1176."
 42512. "Paulsen hybrid No. 1901."
 42513. "Paulsen hybrid No. 1511."
 42514. "Paulsen hybrid No. 1321."
 42515. "Paulsen hybrid No. 1742."
 42516. "Paulsen hybrid No. 1776."
 42517. "Paulsen hybrid No. 1548."
 42518. "Paulsen hybrid No. 1902."
 42519. "Paulsen hybrid" (number not legible).

42520 to 42523.

From Azua, Santo Domingo. Received through Dr. J. N. Rose, U. S. National Museum, April 13, 1916. Quoted notes by Dr. Rose.

42520. *COCCOTHRINAX ARGENTEA* (Lodd.) Sarg. Phœnicaceæ. **Palm.**
 (*Thrinax argentea* Lodd.)

"A common species of Santo Domingo. It has purple fruit."

For previous introduction, see S. P. I. No. 40524.

42521. *GUILANDINA BONDUC* L. Cæsalpiniaceæ.
 (*Cacsalpinia bonducella* Fleming.)

"A low shrub."

For previous introduction, see S. P. I. No. 38891.

42522. *INODES NEGLECTA* (Beccari) O. F. Cook. Phœnicaceæ.
 (*Sabal neglecta* Beccari.)

"A tree about 20 feet high, with large, fanlike leaves and large more or less drooping flower clusters. It doubtless would prove a valuable palm for introduction into the warmer parts of this country."

"This palm was first described by Beccari in Webbia, vol. 2, p. 40, 1907, as *Sabal neglecta*. It is closely related to the hat palm of Porto Rico, *Inodes causiarum*, and is therefore placed in that genus." (O. F. Cook.)

42523. *PICRODENDRON MEDIUM* Small. Simaroubaceæ.

"This plant is common about Azua, Santo Domingo. It is a tree with round, orange-colored fruit."

42524. *DIOSCOREA DAEMONA* Roxb. Dioscoreaceæ. **Yam.**

From Singapore, Straits Settlements. Tubers presented by Mr. I. Henry Burkill, Botanical Gardens. Received April 14, 1916.

"A large climber of the tropical forests of India and Burma. Stems twining to the left, sometimes prickly; leaves digitately three to five nerved; capsule longer than broad and seeds winged at the base only. This wild yam is extensively used as a famine food, chiefly in Burma and the Central Provinces and Central India. It appears never to have been cultivated. Some writers, however, say the roots are highly poisonous and cause intoxication, but are rendered edible by boiling and steeping in running water, this treatment being repeated two or three times. Ridley speaks of the tubers being used in the manufacture of dart poison." (Watt, *The Commercial Products of India*, p. 494.)

42525 to 42527. CHRYSOPHYLLUM CAINITO L. Sapotaceæ.**Caimito.**

From Honolulu, Hawaii. Presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received April 15, 1916.

Star-apple. A fairly large, handsome West Indian tree, with striking dark-green leaves, which are copper colored underneath. Fruits are $2\frac{1}{2}$ to 3 inches in diameter, purplish black, round and smooth. A cross section of the fruit presents a stellate form, the cells with their white, edible contents radiating from a central axis; hence the name *star-apple*. The tree is valuable for ornamental and shade purposes; is propagated by seed and thrives best in deep, rich, well-drained soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 135.)

For previous introduction, see S. P. I. No. 40347.

42525. No. 525.2.

42527. No. 890.3.

42526. No. 890.2.

42528. PHYSALIS GRANDIFLORA Hook. Solanaceæ.**Ground cherry.**

From Prince Albert, Saskatchewan, Canada. Purchased from Mrs. Andrew Knox. Received April 14, 1916.

A *Physalis* found on the sandy banks of the Saskatchewan River, Winnipeg Lakes, and the Red River of the North. It is remarkable for the great size and white color of its flowers, which are nearly an inch broad. The whole plant is exceedingly viscid. (Adapted from *Hooker, Flora Boreali Americana*, vol. 2, p. 90.)

42529. NEYRAUDIA MADAGASCARIENSIS (Kunth) Hook. f. Poaceæ.**Grass.**

From Sibpur, near Calcutta, India. Presented by Maj. A. T. Gage, superintendent, Royal Botanic Garden. Received April 17, 1916.

A grass found in Madagascar that is used, along with other grasses, in the manufacture of ordinary hats. Called *fantaka* in the Hova dialect, though *kit-sangy* is the general name used to designate this grass. (Adapted from *Heckel, Les Plantes Utiles de Madagascar*, p. 55.)

For previous introduction, see S. P. I. No. 39690.

42530 and 42531. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received April 20, 1916.

See S. P. I. No. 42454 for previous introduction and description.

42530. "*Afrangi* (imported)."

42531. "*Shami* (imported) and *Egyptian*." This seed was mixed when received.

42532. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.**

(*Sechium edule* Swartz.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 18, 1916.

"We have but a single variety of chayote." (*Trabut*.)

See S. P. I. No. 30462 for previous introduction.

42533 to 42550.

From Buenos Aires, Argentina. Presented by Señor Benito J. Carrasco, director, Botanic Gardens. Quoted notes by Señor Carrasco except as otherwise stated.

42533. CITHAREXYLUM BARBINERVE Cham. Verbenaceæ.

"*Espino de los bañados*. Magnificent ornamental tree, with fragrant flowers, red fruits, and flexible vibrant wood, used in the manufacture of guitars; from the cool and subtropical regions of Argentina."

For previous introduction, see S. P. I. No. 33943.

42534. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.

(*Cocos pulposa* Barb.-Rord.)

Palm.

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriospatha*. The trunk is 6 to 12 feet by 1½ to 2 feet in diameter, with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The fruit is yellow, about 1 inch long by 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like the pineapple." (*C. B. Doyle*.)

42535. ENTEROLOBIUM TIMBOUVA Mart. Mimosaceæ.

Timbo.

"*Timbo*. A tree with thick bark, reaching 30 meters in height, branching horizontally, fruits of the size and shape of a human ear, whence called also *Oreja de negro*. Of rapid growth, wood good, native of the northern part of Argentina. From the temperate region."

For previous introduction, see S. P. I. No. 33955.

42536. EUGENIA PUNGENS Berg. Myrtaceæ.

Guabiyú.

"*Guabiyú*. An ornamental fruit tree from the temperate and hot regions of Argentina."

For previous introduction, see S. P. I. No. 33959.

42537. FICUS SUBTRIPLINERVIA Mart. Moraceæ.

Gomero.

"*Gomero*. A large tree from the subtropics of Argentina."

For previous introduction, see S. P. I. No. 33963.

42538. LANTANA SELLOWIANA Link and Otto. Verbenaceæ.

Trailing lantana.

"*Salvia morada*. A dry, bunchy shrub, flower bearing; from the cool and temperate regions of Argentina."

42539. LEUCAENA GLAUCA (L.) Benth. Mimosaceæ.

An ornamental tree resembling Mimosa in having 10 stamens and resembling Acacia in its flat pod; much cultivated in warmer climates. The white flowers are numerous, borne in globular heads.

42540. LITHRAEA MOLLEOIDES (Vell.) Engl. Anacardiaceæ.

(*L. aroeirinha* L. Marchand.)

Aroeira brancha.

"*Molle a beber*. A strong shrub with handsome foliage; the fruits are used for making a tonic drink. From the temperate and cool regions of Argentina."

For previous introduction, see S. P. I. No. 33981.

42533 to 42550—Continued.

42541. *MIMOSA SENSITIVA* L. Mimosaceæ. Sensitive plant.

"*Sensitiva*. A vigorous flowering shrub from the Tropics of Argentina."

Received as *Mimosa sensitiva arborea*, implying a treelike habit.

42542. *PHYTOLACCA DIOICA* L. Phytolaccaceæ. Ombú.

"*Ombú*. A large branching tree, the trunk of which reaches in a few years a diameter of several meters. Specimens exist in the Province of Buenos Aires which are 5 to 6 meters in diameter, with heads 15 to 20 meters in diameter. From the temperate and subtropical regions of Argentina."

For previous introduction, see S. P. I. No. 31482.

42543. *PIPTADENIA COMMUNIS* Benth. Mimosaceæ. Cebil.

"*Cebil*. A tree attaining 20 meters in height, the trunk being sometimes a meter in diameter, with rough bark and hard wood. Furnishes tannin. From the temperate regions of Argentina."

42544 and 42545. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava.

42544. "*Guava*. Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina."

Received as *Psidium pomiferum*.

42545. "*Arazú*. Ornamental shrub with beautiful flowers and useful fruits; from the temperate and warmer regions of Argentina."

Received as *Psidium pyriferum*.

42546. *PTEROGYNE NITENS* Tulasne. Cæsalpiniaceæ.

"*Viraró*. A large tree, with strong useful wood; from the temperate regions of Argentina."

For previous introduction, see S. P. I. No. 41308.

42547. *TECOMA STANS* (L.) Juss. Bignoniaceæ. Yellow tecoma.

"*Guaranguay*. A very floriferous ornamental shrub; from the temperate regions of Argentina."

42548. *TERMINALIA TRIFOLIATA* Spreng. Combretaceæ.

"*Palo de lanza*. A vigorous tree, with strong flexible yellowish wood; from the temperate regions of Argentina."

For previous introduction, see S. P. I. No. 34029.

42549. *TIPUANA TIPU* (Benth.) Lillo. Fabaceæ. Tipu.
(*T. speciosa* Benth.)

"*Tipu*. A large tree 50 meters in height, leafy, very ornamental, with good timber; from the subtropical, temperate, and cool regions of Argentina."

For previous introduction, see S. P. I. No. 42331.

42550. *QUILLAJA SAPONARIA* Molina. Rosaceæ. Quillay.

"*Quillay*. A leafy tree, of industrial value because of its saponiferous bark; from the cool and temperate regions of Argentina."

For previous introduction, see S. P. I. No. 34407.

42551. SACCHARUM BIFLORUM Forsk. Poaceæ. Grass.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received April 18, 1916.

"This grass of great size succeeds very well in the sand hills of the coast. It is easily propagated by cuttings, and forms a good screen at very little cost. The results obtained during some years induce me to recommend to you this plant, which grows spontaneously upon the banks of the Nile and in Algeria at Bone. It is much used in Sicily to bind sands and to protect cultivation." (Trabut.)

42552. × CYTISUS DALLIMOREI Rolfe. Fabaceæ. Broom.

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received April 24, 1916.

"A hybrid raised at Kew in 1900 by crossing *Cystisus scoparius* var. *andreaus* (seed bearer) with *C. albus*. It is a tall shrub, perhaps 8 or 9 feet high, of thin, erect habit, suggesting that of *C. scoparius*. Leaves mostly trifoliate, downy. Flowers about five-eighths of an inch long, the whole of the petals suffused with beautiful shades of rosy pink, deepening on the wing petals to crimson. Calyx helmet shaped, shining brown, slightly downy. At each node the flowers are solitary or in pairs. The beautiful broom is quite distinct from any other in cultivation and is the first hybrid broom raised by artificial cross-fertilization, all its predecessors having originated as chance crosses made by insects. It is propagated by grafting on Laburnum. As it flowers regularly and in great profusion in May, it ought in time to become a popular garden shrub." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 458.)

42553 to 42565. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, director, Government Horticultural Experiment Station. Received April 20, 1916. Quoted notes by Mr. T. Kiyono, Semmes, Ala.

42553. "No. 37. *Hagakushi*. Astringent. Fukuoka Province."

42554. "No. 38. *Otani*. Astringent. Fukuoka Province."

42555. "No. 61. *Kabuto-gosho*. Sweet. Gifu Province."

42556. "No. 62. *Kiara*. Sweet. Kumamoto Province."

42557. "No. 63. *Saburoza*. Astringent. Ishikawa Province."

42558. "No. 64. *Kuramitsu*. Astringent. Ishikawa Province."

42559. "No. 65. *Oku-gosho*. Sweet. Gifu Province."

42560. "No. 66. *Kuro-gaki* (or *Birodo-gaki*). Sweet. Gifu Province."

42561. "No. 67. *Midzushima*. Sweet. Ishikawa Province."

42562. "No. 68. *Midzushima*. Sweet. Tomiyama Province."

42563. "No. 69. *Kuramitsu*. Astringent. Fukui Province."

42564. "No. 70. *Saburoza*. Astringent. Fukui Province."

42565. "No. 71. Wild seedling with profuse staminate flower habit, grown in woods near Okudzu station."

42566. RUBUS GEOIDES J. E. Smith. Rosaceæ. Frutilla.

From Punta Arenas, Chile. Presented by Mr. David J. D. Myers, American consul. Received April 18, 1916.

"This fruit is full of seed. I have been unable to learn whether there are any other wild varieties of this *frutilla*, the local name. The plant grows extensively over a large area inland from this port, where fire destroyed the forests some years ago. Neither the plant nor the fruit bears much, if any, relation to the common strawberry from the standpoint of an ordinary observer. The plant is extremely small and the berries are almost completely hidden in the moss and dead leaves. The color of the ripe fruit is amber and resembles the raspberry both in shape and taste. The educated Chileans from the north call the small cultivated strawberries *frutillas* and the large varieties *fresas*. The names seem to be reversed here, and while they call the wild variety *frutilla* also, they do not recognize it as belonging to the same family as the true strawberry." (Myers.)

42567. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam-bean.
(*Pachyrhizus angulatus* Rich.)

From Shonghong, via Swatow, China. Presented by Rev. F. J. Wiens, Menonite Brethren Mission. Received April 15, 1916.

"The root is edible and has a sweet delicious taste. The seeds are planted or sown in April or May, and the flowers are all cut down except those wanted for seeds. The natives tell me the seeds are very poisonous." (Wiens.)

42568 to 42571. TRITICUM spp. Poaceæ. Wheat.

From Madrid, Spain. Presented by Mr. José Hurtado de Mendoza, Estación de Ensayo de Semillas, La Moncloa. Received April 21, 1916.

"The most noteworthy varieties cultivated in the Peninsula."

42568. TRITICUM AESTIVUM L.
(*T. vulgare* Vill.)

42569 to 42571. TRITICUM DURUM Desf.

42572 to 42575.

From Teneriffe, Canary Islands. Presented by Dr. George Perez. Received April 17, 1916. Descriptive notes by Dr. Perez.

42572. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ. Broom.

"*Gacia* is the name under which it is known in our island of Palma, which is the home of this valuable *Cytisus* and where it is cultivated as a forage plant. This variety has the largest leaves, and on this account is the most suitable of the many varieties of this species as a forage plant. It is a most beautiful and ornamental garden plant, and is cultivated in our island of Palma exactly the same as *tagasaste*, but they find they can plant it higher above the sea level. *Gacia* is known to prosper as high as 1,500 meters above sea level, and therefore will stand cold better. My advice, however, is to make trials only in southern California."

For previous introduction, see S. P. I. No. 29641.

42573. CYTISUS PALLIDUS Poir. Fabaceæ. Broom.

"*Gacia blanca*, also *Herdanera*, as it is known in Palma. Besides being very useful as a forage plant, this is a most beautiful and ornamental garden plant."

For previous introduction, see S. P. I. No. 34262.

42572 to 42575—Continued.

42574. *CYTISUS STENOPETALUS* (Webb) Christ. Fabaceæ. **Broom.**

For previous introduction, see S. P. I. No. 42572.

42575. *LIMONIUM FRUTICANS* (Webb) Kuntze. Plumbaginaceæ.
(*Statice fruticans* Webb.) **Sea lavender.**

"Native of the coast region of Teneriffe, where the lowest temperature in winter is much above the freezing point, so that it should not be sown in the open where there are frosts. The seed should be carefully extracted before sowing, or if you find this method too slow (it is far the best), then soak in water at about 70° F. and stir daily until the dried flower heads sink to the bottom, then sow. This process takes about 10 days and the seed begins to come up in about one month; in the extracted-seed method germination takes place after about a week."

42576. *PRUNUS TOMENTOSA ENDOTRICHIA* Koehne. Amygdalaceæ.
Bush cherry.

From Ventimiglia, Italy. Presented by the superintendent, La Mortola Botanic Garden. Received April 20, 1916.

The species is described as follows: "A deciduous shrub of spreading habit, 4 to 8 feet high and twice as wide; leaves dark dull green above, paler and densely woolly beneath. Flowers three-fourths of an inch across, white, tinted with rose, produced singly or in pairs at the joints of the previous year's growth. Fruit bright red, about the size of a small cherry, ripe in July. Native of northern and western China, but introduced from Japan about 40 years ago. It usually flowers about the fourth week in March and is then an object of great beauty and charm. Shoots from 1 to 2 feet long are made in one season, and these the following spring are furnished from end to end with the delicately tinted flowers. It must be said, however, that its beauty is short lived. Some sheltered nook should be chosen for it, a consideration its early blossoms entitle it to. The fruits are not freely produced with us, although about Peking the shrub is cultivated for their sake. Propagated by layers and cuttings of half-ripened wood." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 255.*)

The variety is described by Koehne in Sargent's *Plantae Wilsonianae*, vol. 1, p. 225, as a shrub 1 to 3 meters or a tree up to 7 meters high, from western Hupeh and northern Shensi.

42577 to 42580. *DOLICHOS LABLAB* L. Fabaceæ. **Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. J. F. Waby. Received April 24, 1916. Quoted notes by Mr. Waby.

42577. "*Park's runner* or *scarlet runner*. A viny plant, flowers purplish, pods 6 to 6½ inches long, three-fourths of an inch wide. Beans of the two shades found in the same pod, though more frequently of the darker shade, which is more prolific. I have used it at least twice a week on my table for months; it is decidedly the best we have. See mention in Board of Agriculture Journal of British Guiana, vol. 8, p. 14, 1914."

42578. "Strong vine, prolific, lasting at least two years and giving abundantly if well watered. Purplish flowers, seeds brown, used shelled before the seeds get hard."

42577 to 42580—Continued.

42579. "Dwarf, bushy, 2 to 2½ feet high, white flowers, white seeds, pods small, flat, averaging three seeds each. Grown by the coolies here. This is not to be compared for usefulness with the white-seeded *Nankinicus*."

42580. "A white-flowered kind much used by the coolies."

42581 to 42595.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received April 20, 1916.

42581. *PRUNUS CORNUTA* (Wall.) Steud. Amygdalaceæ.

Himalayan bird cherry.

"A deciduous tree, 50 to 60 feet high in a wild state. Leaves deep dull green above, paler beneath; flowers white, densely set on cylindrical racemes, 3 to 6 inches long, three-fourths to 1 inch wide; each flower is one-fourth to one-third inch across. Fruit round, one-third of an inch in diameter, red, changing to dark brown-purple. Flowers in May. Native of the Himalayas, where it is widely spread up to 10,000 feet and represents in that region *Prunus padus*. So nearly are they allied that many botanists regard them as forms of one species. According to travelers in the Himalayas, *P. cornuta* grows to considerably larger size than does *P. padus*, as we know it in England. The name *cornuta* (horned) refers to the shape of the fruits as often seen in the Himalayas. An insect deposits its eggs in the young fruit, and as the larvæ develop they set up irritation and cause a curious growth, which is from 1 to 2 inches long and curled like a horn. It is analogous to the many galls that occur on our own trees, notably oaks." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 233.)

42582. × *PRUNUS EMINENS* Beck. Amygdalaceæ. Hybrid cherry.

"A small pretty tree similar to *Prunus acida* in flower, but of more open growth; is described as a hybrid between it and *P. fruticosa*." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 227.)

42583. *PRUNUS INCANA* (Pall.) Stev. Amygdalaceæ. Willow cherry.

"A deciduous shrub, 4 to 8 feet high, of rather open, loose habit. Leaves dark green and smooth above, covered with a close white wool beneath. Flowers one-fourth of an inch across, borne singly from the buds of the previous year's shoots; petals deep rosy red. Fruit smooth, red, one-third of an inch across. Native of southeastern Europe and Asia Minor; introduced in 1815. Its flowers appear in April along with the young leaves, and it is then very pretty. Sometimes confused with *Prunus nana*, it is easily distinguished from that and most other species by the close white felt on the under surface of the willowlike leaves. The fruit is quite different from that of *P. nana*, being cherrylike." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 238.)

42584. *PRUNUS MAXIMOWICZII* Rupr. Amygdalaceæ. Korean cherry.

"A deciduous tree up to 20 or 30 feet high, with a slender trunk. Flowers rather dull yellowish white, about five-eighths of an inch across, produced in mid-May on stalked racemes, remarkable for the large leaf-like bracts with which they are furnished. Fruit globose, one-sixth of an inch wide, shining, at first red, then black; ripe in August. Native

42581 to 42595—Continued.

of Korea, Manchuria, and Japan. The tree is interesting and very distinct among cherries because of the conspicuous bracts on the inflorescence, which remain until the fruit is ripe; but neither in flower nor fruit is it particularly attractive as cherries go. For its autumn coloring it may prove valuable, as it turns a brilliant scarlet both in Japan and North America. It is very hardy." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 243.)

For previous introduction, see S. P. I. No. 40997.

42585. *RUBUS COREANUS* Miquel. Rosaceæ.

Bramble.

"A deciduous shrub, 8 to 10 feet high (it has been found 15 feet high in a wild state), with erect or arching, stout, biennial stems, branching toward the top, and armed with stiff, broad-based spines. Leaves composed usually of seven dark lustrous-green leaflets. Flowers borne in flattish clusters, terminating short shoots from the wood of the previous year. Fruit of various colors from red to nearly black, edible but small, and of poor flavor. Native of Korea and China; introduced from the latter country in 1907 by Wilson, who found it at altitudes up to 6,000 feet. It is one of the handsomest of all Rubi in its vigorous blue-white stems and beautiful pinnate foliage, and may prove a valuable acquisition in gardens should it be quite hardy." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 456.)

For previous introduction, see S. P. I. No. 26277.

42586. *RUBUS BIFLORUS QUINQUEFLORUS* Focke. Rosaceæ.

Bramble.

"A deciduous shrub, with erect stems up to 10 feet high and 1 inch thick at base, covered with a thick, white, waxy coating and armed with straight, broad-based spines. Toward the top the stems branch freely, the branches also being white, and, like the leafstalks and often the midrib, spiny. Leaves 4 to 10 inches long, composed of three to five leaflets, which are dark green above, covered beneath with a close white felt. Flowers terminal and axillary, white, three-fourths of an inch across; fruits edible. Native of the Himalayas up to 10,000 feet; introduced in 1818. Among the longer cultivated, white-stemmed raspberries this is by far the most effective, although it is no doubt equaled by some of the newer Chinese species. Its flowers are of little consequence, being small and of little beauty. It should be raised from seed (which ripens here), and planted in groups of not less than half a dozen. The soil should be a good loam, the aim being to produce stout thick stems, for the stouter they are the whiter and more persistent is their waxy covering. After the previous year's stems have flowered and borne fruit, they should be cut away (usually about August), leaving only the virgin growths of the year. During autumn and winter a group of this *Rubus* makes one of the most striking plant pictures in the open air. Var. *quinqueflorus*.—A vigorous Chinese form introduced by Wilson in 1907, with the terminal inflorescence composed most frequently of five (sometimes up to eight) flowers. In the type they are usually two or three." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 454.)

For previous introduction, see S. P. I. No. 35197.

42587. *RUBUS LASIOSTYLUS DIZYGOS* Focke. Rosaceæ.

Bramble.

"An erect-growing deciduous shrub with biennial stems 4 to 6 feet high, covered with a blue-white, waxy bloom, and closely set with bristle-

42581 to 42595—Continued.

like spines. Leaves composed of three or five leaflets, and on young vigorous plants as much as 14 inches long, but usually some 6 or 8 inches long. Flowers small, with reddish purple petals, which are shorter than the calyx segments and soon fall. Fruit 1 inch across, roundish, red, and downy, with an agreeable acid taste. Native of central China; originally discovered in Hupeh by Henry, who sent seeds to Kew in 1889, from which plants were raised that flowered in 1894. This is one of the most striking of the white-stemmed brambles. It has lately been reintroduced in quantity by Wilson from Hupeh." (*W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 462.*)

42588. *RUBUS INOPTATUS* Focke. Rosaceæ. Bramble.

A Chinese bramble, growing at altitudes of 600 to 2,200 meters, of which Focke says (*Sargent, Plantae Wilsonianae, vol. 1, p. 54*): "This Chinese plant seems to be rather constant and looks very different from the tropical *R. niveus* Thunberg. It is therefore reasonable to separate the two plants specifically, although there occur connecting links in the Himalayas."

For previous introduction, see S. P. I. No. 26276.

42589. *RUBUS MESOGAEUS* Focke. Rosaceæ. Bramble.

A slender climbing bramble with stems 4 to 5 meters long, rather small flowers, and small globose berries. Native of central China, especially western Hupeh and Szechwan. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, No. 72, p. 204.*)

42590. *RUBUS OMEIENSIS* Rolfe. Rosaceæ. Bramble.

A large straggling shrub with round stems unarmed, but furnished with small stellate hairs. Leaves of maplelike form, five or obscurely seven lobed, with a heart-shaped base; 3 to 7 inches long and as wide. Stipules one-half to three-fourths of an inch long, cut up into deep narrow segments. Panicles many flowered, terminal; flowers half an inch across with downy stalks; calyx downy, the lobes pointed, triangular; petals purple. Fruit black, well flavored, ripening late. Native of western China, and found on Mount Omi by Wilson, who introduced it for Messrs. Veitch, with whom it flowered in August, 1908. It grows up to 6,000 feet elevation and will probably be perfectly hardy. It makes a growth 10 or 12 feet long in a season. The stipules are rather remarkable. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 465.*)

For previous introduction, see S. P. I. No. 40195.

42591. *RUBUS PUBESCENS* Weihe. Rosaceæ. Bramble.

A very robust bramble, native of central and western Germany, Switzerland, France, and England, with strong, thick canes which do not ascend to any height without support. Spines very strong, reddish brown, on broad compressed bases. Flowers appearing in July, conspicuous, white, sometimes pale red. Fruit well developed, conspicuous, round, with pleasant flavor.

42592. *RUBUS THIBETANUS* Franch. Rosaceæ. Bramble.

An erect deciduous shrub, 6 feet or more high; stems biennial, smooth, round, covered with a purplish bloom and set irregularly with straight,

42581 to 42595—Continued.

slender prickles. Leaves pinnate, 4 to 9 inches long, composed of 7 to 13 leaflets. Flowers one-half inch across, petals purple. Fruit roundish, five-eighths of an inch across, black with a bluish bloom. Native of western China; discovered and introduced by Wilson for Messrs. Veitch, with whom it flowered in August, 1908. Wilson found it in the Min River valley at altitudes of 4,000 to 6,000 feet, where it is rare. Of the newer Chinese Rubi it is one of the most distinct and attractive looking, for both its blue-purple stems and its very handsomely cut foliage. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 468.)

42593. RUBUS THUNBERGII GLABELLUS Focke. Rosaceæ. **Bramble.**

A Chinese Rubus from western Hupeh differing from the typical Japanese plant in its more robust habit and its sparingly pilose leaves and twigs.

42594. RUBUS TRIANTHUS Focke. Rosaceæ. **Bramble.**

A deciduous shrub of wide-spreading habit, the biennial stems erect, much branched, spiny, blue-white, 4 to 6 feet high. Leaves simple, distinctly three lobed on the barren stems, less markedly lobed on the flowering shoots, whitish beneath, dark green above. Flowers pinkish white, insignificant, produced a few together on cymes that are terminal on short lateral twigs. Fruit dark red. Native of central China up to 4,000 feet; introduced for Messrs. Veitch by Wilson in 1900. It is distinct from most Rubi in the absence of down or hairs, but has not much garden value. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 469.)

42595. RUBUS VICARIUS Focke. Rosaceæ. **Bramble.**

A form from western Szechwan, closely related to *Rubus idaeus*. (Adapted from Focke, *Species Ruborum*, *Bibliotheca Botanica*, No. 72, p. 204.)

42596. STRYCHNOS SPINOSA Lam. Loganiaceæ. **Kaffir orange.**

From Inhambane, Portuguese East Africa. Presented by Rev. Pliny W. Keys, Methodist Episcopal Mission. Received April 24, 1916.

"A remarkable East African shrub or small tree with evergreen foliage and short spines, bearing large, round, green fruits with extremely hard shells. When these ripen they turn yellow and scent the room with the fragrance of cloves. The seeds have a small amount of strychnin in them. The flesh is edible, reminding one of a brandied peach." (*Fairchild.*)

For previous introduction, see S. P. I. 33341.

42597 to 42605.

From Ventimiglia, Italy. Received through the superintendent, La Mortola Botanic Garden, April 17, 1916.

42597. CORNUS CAPITATA Wall. Cornaceæ. **Bentham's cornel.**

A deciduous or partially evergreen tree, 30 to 40 or more feet high, of bushy habit, and, if allowed to develop without interference by other trees, wider than it is high. Leaves leathery, opposite, dull gray-

42597 to 42605—Continued.

green. Flowers minute, inconspicuous, crowded in a hemispherical mass half an inch across. The beauty of the inflorescence is in the four to six sulphur-yellow bracts that subtend the true flowers; these are obovate, $1\frac{1}{2}$ to 2 inches long, and three-fourths to $1\frac{1}{2}$ inches wide. The fruit is a fleshy, strawberry-shaped, agglomerated, crimson mass, 1 to $1\frac{1}{2}$ inches across, in which many seeds are imbedded. Introduced from the Himalayas in 1825 and is a native also of China. When covered with the pale yellow "flowers," they provide one of the richest ornaments, and in fruit, too, they are objects of great beauty, but often damaged by birds. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 387.)

For previous introduction, see S. P. I. No. 42287.

42598. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

A treelike half-woody plant, 6 to 10 feet high, with large entire cordate-ovate leaves and small pinkish fragrant flowers followed by egg-shaped, reddish brown, finely striped fruits about 2 inches long. These are seedy, musky acid, and somewhat tomatolike in flavor. Grown mostly as a curiosity. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 2, p. 943.)

42599. CYPHOMANDRA FRAGRANS (Hook.) Sendt. Solanaceæ.

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Tree-tomato.

This plant is a native of Argentina. The stem is erect, treelike, 12 or more feet high, bearing at the top many long branches, spreading horizontally. The whole plant is glabrous. The leaves are in unequal pairs, the lesser one in the shorter petiole, cordate, glossy, and somewhat succulent; the larger one on a longer petiole, rather ovate than cordate, dark green, a little pale beneath. From the forking of the branches the peduncles have their origin; these are pendent, bearing a raceme of flowers. The mouths of the flowers are all directed downward. Buds at first purple, then greenish, and when fully open are green with a dark streak on the back of each segment. The corolla is thick and fleshy, deeply cut into five oblong, reflexed segments. (Adapted from Curtis's *Botanical Magazine*, pl. 1839.)

For previous introduction, see S. P. I. No. 35096.

42600. HAKEA CUCULLATA R. Br. Proteaceæ.

An erect shrub 4 to 5 feet high with pale brown, very hairy branches. The large sessile leaves are leathery, heart shaped, and are glaucous green in color. The red flowers appear in copious clusters and are composed of four strap-shaped segments. Fruits clustered, about an inch long. (Adapted from Curtis's *Botanical Magazine*, pl. 4528.)

42601. HAKEA ELLIPTICA (Smith) R. Br. Proteaceæ.

An erect shrub 6 to 15 feet high with nearly sessile oval or elliptical leaves 2 to $3\frac{1}{2}$ inches long, white flowers in globose sessile clusters and ovoid fruit. The foliage is by far the finest of all the introduced kinds, the rich bronze color of the young shoots being hardly rivaled among other shrubs. The compact, erect habit makes it generally suited for lawn and shrubbery planting. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 3, p. 1428.)

42597 to 42605—Continued.

42602. *HAKEA LAURINA* R. Br. Proteaceæ.

A tall shrub up to 30 feet in this country and becoming treelike in Australia. Leaves elliptical or lanceolate, 5 to 6 inches long. Flowers crimson in a globular head $1\frac{1}{2}$ to 2 inches thick, from which the numerous showy golden-yellow styles project 1 inch or so in every direction. It is the only species with showy flowers grown in America. Equally satisfactory for shrubbery and for hedges. Always highly ornamental. It has been called "the glory of the gardens of the Riviera." (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 3, p. 1428.*)

42603. *HAKEA SUAVEOLENS* R. Br. Proteaceæ.

A rounded shrub from 8 to 15 feet high, leaves 2 to 4 inches long, cylindrical, with rigid spinelike tip, occasionally entire, but usually branched into rigid cylindrical lobes. Flowers white, fragrant. An easily grown, drought-resistant, self-protective plant, and therefore a favorite for depot grounds, public parks, impenetrable hedges, and the like. Makes a suitable covering for dry hillsides, although not deep rooted and sometimes inclined to become top-heavy. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 3, p. 1428.*)

42604. *HAKEA VARIA* R. Br. Proteaceæ.

A shrub resembling *Hakea suaveolens*, with some leaves with nearly cylindrical lobes, varying, however, to flat and hollylike, 1 to 2 inches long. Flowers in small clusters. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 3, p. 1428.*)

42605. *ALECTRYON TOMENTOSUM* (F. Muell.) Radlk. Sapindaceæ.
(*Nephelium tomentosum* F. Muell.)

A tree 20 to 30 feet high, from Queensland and New South Wales. Leaflets four to eight, 2 to 4 inches long; flowers small, crowded on short, slightly branched tomentose panicles sometimes reduced to simple racemes. Fruit softly tomentose-villous, depressed at the top, of two or rarely three globular, slightly compressed lobes, united at the top, four or five lines in diameter, rather hard, indehiscent. Seeds half immersed in a yellowish arillus. (Adapted from *Bentham, Flora Australiensis, vol. 1, p. 466.*)

For previous introduction, see S. P. I. No. 35102.

42606. *CITRUS LIMONIA* Osbeck. Rutaceæ. **Szechwan lemon.**

From Chungking, China. Seeds presented by Mr. E. Widler. Received April 15, 1916.

"This lemon answers almost the description of the Ichang lemon, excepting that its seeds are much smaller, and the inside seems to be all pith. These Szechwan lemons grow about 100 miles distant from Chungking. Chinese name *Hsiang yüan*." (Widler.)

42607. *ARALIA CACHEMIRICA* Decaisne. Araliaceæ.

From Jamaica Plain, Mass. Presented by Prof. C. S. Sargent, Arnold Arboretum. Received April 28, 1916.

A spineless herb from the Himalayas growing to a height of 8 feet, with quinate compound leaves, the pinnæ often with five to nine leaflets which are

usually rounded at the base, oblong-ovate, doubly serrate, and 4 to 8 inches long. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 344.)

For previous introduction, see S. P. I. No. 33142.

42608. PANICUM LAEVIFOLIUM Hack. Poaceæ. Grass.

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received April 25, 1916.

"An annual hay grass common in wetish lands in our maize belt. This is a remarkably heavy cropper, and if I remember rightly one of my early investigations gave a cutting of about 5 tons of hay to the acre, but I have not my original notes, which have been lost somewhere in the Department of Agriculture. This grass seems to thrive best on alluvial deposits, but it is also found on almost any kind of soil where water is apt to stand during rains. Animals are extremely fond of it, and we consider it one of our best native grasses. As compared with *teff* (*Eragrostis abyssinica*), the principal drawback of *Panicum laevifolium* is the unevenness in maturity of its seeds, whereas *teff* matures very evenly, owing to the fact that the first-ripened seeds do not fall off easily, as is the case with *P. laevifolium*. However, in spite of this drawback I think this grass may meet the needs of some particular locality in the South where the rainfall is erratic and apt to come after long intervals of drought." (Davy.)

42609. INDIGOFERA GLANDULOSA Wendl. Fabaceæ. Indigo.

From Bangalore, Mysore, India. Presented by Mr. G. H. Krumbiegel, superintendent, Government Botanic Gardens, Lal-bagh. Received April 24, 1916.

An ornamental leguminous annual from tropical Asia and Australia, about a foot tall and bearing purple, pea-shaped flowers in July. (Adapted from *Johnson's Gardeners' Dictionary*, p. 512.)

For previous introduction, see S. P. I. No. 42027.

42610. ZEA MAYS L. Poaceæ. Corn.

From Canada. Presented by Prof. James Murray, MacDonald College, Quebec. Received April 24, 1916.

"*Quebec yellow*, which yielded an average of 84 bushels per acre for four years on an acre block at MacDonald College." (Fairchild.)

42611. CANNABIS SATIVA L. Moraceæ. Hemp.

From Yokohama, Japan. Procured from the Yokohama Nursery Company, through Mr. Lyster H. Dewey, of the Bureau of Plant Industry. Received May 2, 1916.

"Produced in Kogen Do (Kang Won), a northeastern province back of Seoul, facing the Japan Sea." (S. Iida.)

42612 to 42630.

From British India. Presented by Mr. M. Buysman, Lawang, Java. Received April 19, 1916.

42612. ARALIA CISSIFOLIA Griffith. Araliaceæ.

A shrub 10 feet high, or erect small tree; its branches with short strong deflexed prickles are sometimes clustered at the nodes. Leaflets

42612 to 42630—Continued.

lanceolate, acuminate; peduncles solitary, each carrying a many-flowered umbel. Fruit glabrous. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 722, 1879.)

42613. *BRASSAIOPSIS SPECIOSA* Dec. and Planch. Araliaceæ.

Frequently found from Nepal and Assam to Chittagong. A small tree of almost palmlike character, scarcely branched, and leafy only at the extremity of the branches. The leaves are large, on long petioles, swollen at the base, digitate, consisting of about seven large leaflets which are oblong-lanceolate and glabrous. Racemes 4 to 5 feet long, pendent from the apex of the stem, and bearing at the end of the branches large densely-flowered umbels of a brownish or yellowish green color. One-seeded, subglobose fruits. (Adapted from *Curtis's Botanical Magazine*, pl. 4804, as *Hedera glomerulata*; and *Hooker, Flora of British India*, vol. 2, p. 737.)

42614. *BYTTNERIA ASPERA* Colebr. Sterculiaceæ.

"A climbing shrub of the central and eastern Himalayas up to 4,000 feet, the Khasia Hills, the tropical forests of Burma, and the Andamans. It forms often a very dense growth, and has large fruit with strong spikes." (*Gamble, A Manual of Indian Timbers*, 2d ed., p. 105.)

42615. *CAMPANULA COLORATA* Wall. Campanulaceæ. Bellflower.

The deep-colored bellflower from the high altitudes of India and Afghanistan is variable in its growth, sometimes erect, at others trailing. A desirable ornamental for rock gardens. The slender stems are much branched and grow to a length of 2 feet. The leaves are broadly oval or ovate-lanceolate, and sessile or attenuated into a short footstalk. The flowers are bell shaped, deep bright purple, the tube being rather elongated and the lobes rather large, spreading. (Adapted from *Curtis's Botanical Magazine*, pl. 4555.)

42616. *DISPORUM CALCARATUM* D. Don. Convallariaceæ.

"This species, remarkable for the length of the spurs at the base of the sepals, was collected by Mr. Gomez on the Jentya Hills in Sylhet, a mountainous region on the northeastern frontier of Bengal. The flowers, which appear in May, are apparently of a green color, and vary from two to five in the umbel. The leaves are altogether sessile, not being narrowed at the base as in most of the other species. The inflorescence, as in the rest of the genus, is really terminal, although from the prolongation of the branches beyond it, it has the appearance of being lateral." (*D. Don*, in *Transactions of the Linnean Society of London*, vol. 18, p. 516, 1841.)

42617. *GAULTHERIA TRICHOPHYLLA* Royle. Ericaceæ.

A low evergreen shrub of densely tufted habit, 3 to 6 inches high, spreading by means of underground shoots; stems wiry and slender, bristly. Leaves narrow, glossy dark green above, pale beneath. Flowers solitary in the leaf axils; corolla pink, one-sixth of an inch long and wide, bell shaped. Fruit blue-black. Native of the Himalayas up to 13,000 feet. It is a dainty plant suitable for the rock garden and pleasing for the bright green of its foliage and neat habit. Propagated by cuttings and division. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 582.)

42612 to 42630—Continued.

42618. *LITSEA ZEYLANICA* Nees. Lauraceæ.

A middle-sized evergreen tree, glabrous, only leaf buds and pedicels pubescent. Leaves alternate, thinly coriaceous, pale beneath, 4 to 6 inches long, on a petiole half an inch long. Flowers yellowish white, funnel shaped, in dense sessile clusters. Berry subglobose, one-third of an inch in diameter. (Adapted from *Brandis, Forest Flora of India*, p. 382.)

42619. *LONICERA MACRANTHA* (Don) Spreng. Caprifoliaceæ.

Honeysuckle.

An ornamental evergreen climbing shrub with shining green leaves, pale beneath, and fragrant white flowers changing to yellow. It much resembles the Japanese honeysuckle (*Lonicera japonica*), but the unopened flowers are pink or reddish, and the fruit is white. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 10.)

42620. *LUCULIA GRATISSIMA* (Wall.) Sweet. Rubiaceæ.

"Himalayas and Ava, at elevations of 4,000 to 6,000 feet. A tall shrub or small tree. Important in the series of plants destined to maintain garden fragrance well throughout the year, the copious large blossoms being developed in the coolest season. The plant hates frost and dry heat. The flowers will likely be acceptable for perfume factories." (*Mueller, Select Extra-Tropical Plants*, p. 292.)

42621. *MICROTROPIS DISCOLOR* Wall. Celastraceæ.

A small evergreen or shrub from the forests of the central Himalayas up to 7,000 feet, the Khasia Hills, and the damp hill forests of Burma. The wood is white and easily worked. (Adapted from *Gamble, A Manual of Indian Timbers*, 2d ed., p. 175.)

42622. *PANAX PSEUDOGINSENG* Wall. Araliaceæ.

"Doubtfully separable from the true ginseng of Japan, *Panax ginseng* C. A. Mey., which differs by having broader, more obovate, less bristly leaves. The Indian examples show every form of rootstock and tuber attributed specially to *P. ginseng* and to *P. quinquefolium* L." (*Hooker, Flora of British India*, vol. 2, p. 721.)

42623. *PRINSEPIA UTILIS* Royle. Amygdalaceæ.

A deciduous thorny shrub from the Himalayas and the Khasia Hills. The hard, compact wood is red, close and even grained, and is used for fuel and for walking sticks. The fruit is like a sloe (*Prunus spinosa*), and an oil is expressed from the seeds which is used for food and for burning. (Adapted from *Gamble, A Manual of Indian Timbers*, 2d ed., p. 316.)

42624. *RIBES GRIFFITHII* Hook. f. and Thoms. Grossulariaceæ.

An erect shrub 8 feet high, from the subtropical regions of the eastern Himalayas. Leaves 2 to 3 inches long. Flexuose, pendent, very lax racemes, 3 to 6 inches long; berry one-fourth of an inch long, red. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 411.)

42625. *CAUTLEYA LUTEA* Royle. Zinziberaceæ.

(*Roscoeia elatior* Smith.)

A common plant in the Himalayas at elevations of 5,000 to 8,000 feet from Kashmir to Bhutan and 5,000 to 6,000 feet in the Khasia Moun-

42612 to 42630—Continued.

tains. Stems grow to a height of 18 inches from the rather swollen rooting base and are leafy all the way up. Narrow leaves 5 to 10 inches long, bright green above, paler or suffused or streaked with red-brown beneath. The spike is 4 to 8 inches high, flowers rather remote; bracts green or red-purple; flowers $1\frac{1}{2}$ to 2 inches long. Calyx tubular, red-purple. Corolla golden yellow. (Adapted from *Curtis's Botanical Magazine*, pl. 6991.)

42626. *RUBUS LINEATUS* Reinw. Rosaceæ.

Bramble.

A strong suberect herb with softly pubescent branches. Leaflets three to five, subsessile, coriaceous. Flowers in axillary short heads and terminal elongate silvery panicles. Numerous small red drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

For previous introduction, see S. P. I. No. 30178.

42627. *SALVIA CAMPANULATA* Wall. Menthaceæ.

An herb with ascending hirsute stem and axillary or terminal racemes of yellow flowers with purple dots. From Gossain Than, India. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 1, p. 67, 1830.)

42628. *SARCOCOCCA SALIGNA* (Don) Muell. Arg. Buxaceæ.

(*S. pruniformis* Lindl.)

"An evergreen shrub, 2 to 3 feet high; stems erect, smooth. Leaves 3 to 5 inches long, one-half to $1\frac{1}{8}$ inches wide; narrow-lanceolate, with a long drawn-out point; base narrowly wedge shaped; smooth, glossy, with a marginal vein on each side extending all round the leaf; stalk one-fourth to three-eighths of an inch long. Flowers greenish white, in short axillary racemes opening in winter and spring. Berries egg shaped, one-third to one-half inch long, purple. Native of the Himalayas and China, the form from the latter being probably the hardier. The Himalayan plant has long been cultivated indoors at Kew, but the Chinese one was introduced by Wilson about 1902 and has so far proved quite hardy and a vigorous grower. From *Sarcococca humilis* and *S. ruscifolia* it is distinguished by the absence of down from the stems, as well as in stature and length of leaf." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 500.)

42629. *STROBILANTHES PECTINATUS* (Wall.) T. Anders. Acanthaceæ.

A spreading shrub up to 10 feet high with heads of wide funnel-shaped, purple flowers $1\frac{1}{2}$ to $2\frac{1}{4}$ inches across. An important under-shrub in the Himalayan forests. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 446; and *Gamble, A Manual of Indian Timbers*, 2d ed. p. 519.)

42630. *VIBURNUM CYLINDRICUM* Buch.-Ham. Caprifoliaceæ.

An evergreen shrub or, in some of its native habitats, a tree 40 to 50 feet high. Flowers white, quite tubular, about one-fifth of an inch long, produced from July to September in usually 7-rayed cymes 3 to 5 inches across. The cymes are rendered pretty by the protruded bunch of lilac-colored stamens. Fruit egg shaped, one-sixth of an inch long, black. Native of the Himalayas and China. Most of the plants now in cultivation are Chinese, and these are probably hardier than the Indian ones. They have at any rate succeeded very well in the Coombe Wood Nursery.

42612 to 42630—Continued.

Two characters make this species very distinct, viz, the tubular corolla with erect, not spreading lobes, and the curious waxy covering of the leaves; the latter only shows itself when the leaf is touched or bent; ordinarily they are of a dingy dark green. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 645.)

42631. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

From Hilo, Hawaii. Tubers presented by the Hilo Boarding School, at the request of Mr. J. B. Thompson, Hawaii Experiment Station, Glenwood. Received May 1, 1916.

Lihilihi molina variety.

42632. *CERATONIA SILIQUA* L. Cæsalpiniaceæ. Carob.

From Athens, Greece. Presented by the Royal Society of Agriculture. Received April 25, 1916.

A small shrubby tree, native of southern Europe and extensively cultivated for its sweet, sugary, flat pods. They are a valuable fattening and nutritious food for cattle and are also relished by human beings. The tree is frequently unisexual. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 174.)

See S. P. I. No. 30914 for previous introduction.

42633. *VICIA FABA* L. Fabaceæ. Broad bean.

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received May 1, 1916.

"*Habas*, which is the only commercially successful variety of the horse bean known in this market." (Kenna.)

42634 to 42640.

From Christiania, Norway. Presented by Mr. Rolf Nordhagen, Botanic Garden. Received April 20, 1916.

42634. *AVENA PLANICULMIS* Schrad. Poaceæ. Oats.

"Possesses leaves 1 inch wide; occurs in eastern Siberia in dry, open places." (A. S. Hitchcock.)

42635. *BERBERIS* sp. Berberidaceæ. Barberry.

"I am very sorry to say that after examining both *chinensis* and *spathulata* [S. P. I. No. 42637] I have come to the conclusion that they are not rightly determined." (Nordhagen.) Received as *Berberis chinensis* Poir.

42636. *BERBERIS INTEGERRIMA* Bunge. Berberidaceæ. Barberry.

Shrub growing to 6 feet tall, last year's branches terete, purplish brown; spines usually simple, about 2 inches long. Leaves obovate or broadly obovate, usually entire, sometimes remotely setose-serrate, grayish green. Racemes dense, usually many flowered. Flowers are small, on short pedicels, about one-fifth of an inch long. Fruits black, globose-ovoid. A somewhat variable species. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 490.)

42634 to 42640—Continued.

42637. *BERBERIS* sp. Berberidaceæ.

Barberry.

"I am very sorry to say that after examining both *chinensis* [S. P. I. No. 42635] and *spathulata* I have come to the conclusion that they are not rightly determined." (Nordhagen.) Received as *Berberis spathulata* Schrad.

42638. *MALUS PUMILA* Mill. Malaceæ.

Paradise apple.

"Paradise. A bushy apple, apparently rarely growing over 5 feet in height. A native of the Caucasus, whence it probably was introduced into western Europe, where it is now extensively used as a dwarfing stock for apples. This shrubby apple produces red fruits of fair quality, is very drought resistant, and stands high summer temperatures. May be used in hybridization work and in creating a strain of bush apples." (Meyer. See S. P. I. No. 27968, *Inventory* 23, p. 52.)

Seeds received as *Pyrus paradisiaca*. *Malus pumila* is, however, the earlier name.

42639. *RUBUS CAESIUS* L. Rosaceæ.

Dewberry.

"A deciduous shrub, with slender creeping stems, prickly, and covered with a whitish bloom when young. Leaves usually composed of three leaflets which are green on both sides. Flowers white, in small clusters. Fruit composed of a few large carpels, covered with a blue-white bloom when ripe. This is one of the British brambles easily distinguished from all the forms of common blackberry by the few but large 'pips' composing the fruit and by their being covered, like the young stems, with a white or bluish bloom. It is common in Britain and over Europe, extending into northern Asia. Of no value for gardens." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 455.)

For previous introduction, see S. P. I. No. 30161.

42640. *VACCINIUM MYRTILLUS* L. Vacciniaceæ.

Bilberry.

A deciduous shrub, usually 6 to 12 inches high, sometimes more. Leaves ovate, often somewhat heart shaped, bright green, and quite smooth. Flowers produced in May usually singly on drooping stalks from the leaf axils. Corolla nearly globular, pale pink, one-fourth of an inch long. Berries black, with a blue bloom, one-third of an inch in diameter, globular. Native of Britain, where it is one of the commonest of mountain and moorland shrubs, also of northern and central Europe. The bilberry is one of the most valuable wild fruits of Britain and is frequently offered in considerable quantities in the markets of north country towns. It is used for making tarts and jelly and is especially delicious eaten with cream and sugar. A very hardy plant, it manages to survive on the summits of our loftiest mountains. It is scarcely of sufficient interest for the garden, and does not always thrive well transplanted to low-level gardens, in the South at any rate. Its angled stems distinguish it from the other British species. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 628.)

42641. *VICIA FABA* L. Fabaceæ.

Broad bean.

From Yokohama, Japan. Presented by Miss Eliza R. Scidmore. Received May 5, 1916.

"Large shipments of horse beans have lately been made to Australia from Japan, and Australian varieties are being experimented with here." (*Seidmore*.)

42642. ZEA MAYS L. Poaceæ.

Corn.

From Tucson, Ariz. Presented by Mr. George F. Freeman, acting director, University of Arizona. Received May 5, 1916.

"*Papago* sweet corn. We do not really expect that this will be promising as a sweet corn outside of the Southwest, but some results in eastern Kansas and Nebraska last year indicate that it might prove a valuable silage or forage corn in the humid sections." (*Freeman*.)

42643. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*P. juliflora* DC.)

Algaroba.

From Kingston, Jamaica. Presented by Mr. W. Harris, superintendent, Public Gardens. Received April 7, 1916.

A shrub or tree, 3 to 40 feet high, with bipinnate leaves of 15 to 20 pairs of leaflets, each composed of one or two pairs of pinnæ; and axillary flowers in cylindrical heads resembling those of *Acacia* spp. Native of Mexico and the West Indies.

42644 to 42646. VICIA FABA L. Fabaceæ.

Broad bean.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 5, 1916. Notes by Mr. Brown.

"Varieties usually grown in Egypt."

42644. "*Egyptian tick* bean."

42646. "*Fava Pavonazza*."

42645. "*White Cyprus* bean."

42647. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received May 8, 1916.

"In its young state this is an exceedingly ornamental evergreen shrub. The large orbicular-cordate acuminate leaves at first are purple, with the course of the veins picked out with green; afterwards they are green with purple veins. The stipules are remarkable for concealing between them the terminal bud; they are obliquely obovate-oblong, purplish. Himalaya." (*Kew Bulletin, Additional Series 4, 1900.*)

For previous introduction, see S. P. I. No. 39639.

42648. PLATANUS ORIENTALIS L. Platanaceæ.

Oriental plane tree.

From Lahore, India. Presented by the superintendent, Agri-Horticultural Society. Received May 4, 1916.

"A deciduous tree of the largest size, in this country occasionally 80 to 100 feet high and 14 to 20 feet in girth of trunk; in open situations it usually branches a few feet from the ground into several large spreading limbs; young shoots at first covered with pale brown hair tufts, becoming smooth later. Leaves palmate, 6 to 10 inches wide, somewhat less in length, with five large

lobes and usually a smaller one on each side at the base; the lobes, which are half to two-thirds the depth of the blade and lance shaped, each have one to three large teeth or minor lobes at the sides. When they first unfold, the leaves are covered with a thick whitish brown felt composed of stellate hairs, which later falls away, leaving the leaf smooth except near the veins beneath and glossy above; stalk $1\frac{1}{2}$ to 3 inches long. Fruit balls two to six on each stalk, 1 inch wide, bristly." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 203.)

42649 to 42673.

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received April 26, 1916. Plants of the following:

42649 to 42655. ARUNDINARIA spp. Poaceæ. Bamboo.

42649. ARUNDINARIA GRAMINEA (Bean) Makino.

A slender and very hardy bamboo, with stems up to 10 feet high and about one-fourth of an inch in diameter. The leaves are the narrowest in proportion to their length of all the hardy bamboos, being 4 to 9 inches long but not more than half an inch wide. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 215.)

42650. ARUNDINARIA SIMONII (Carr.) A. and C. Rivière.

A very vigorous bamboo, which spreads rapidly by means of its underground suckers, and, with the exception of *Arundinaria fastuosa*, is the tallest of our hardy sorts. It has stems up to 18 feet high, 1 to $1\frac{1}{4}$ inches in diameter at the base, the outer ones arching outward. The leaves are narrowly oblong, broadly wedge shaped at the base, with long tapering points, 3 to 12 inches long and one-third to $1\frac{1}{4}$ inches wide, vivid green above, and glaucous on one side of the midrib beneath, rather greenish on the other. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 219.)

"The sheaths nearest the ground are short, though long enough to overlap the internodes, but those of the upper joints, although 8 to 10 inches long, do not exceed the internodes in length. They are at first of a fine green color, shading into purple, which soon fades, however, to a dull yellow. These prominent sheaths, which are thick, stiff, and beautifully glazed on the side next the culm, will easily distinguish this arundinaria from any other common Japanese form." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 32.)

42651. ARUNDINARIA JAPONICA Sieb. and Zucc.

A very hardy, handsome evergreen bamboo, having larger leaves than any other species of its height and character that we can grow outside. It maintains a rather tufted habit. The stems are 10 to 12 feet high, erect, one-sixth to two-thirds of an inch in diameter, with erect branches near the top. Leaves 7 to 12 inches long, three-fourths of an inch to 2 inches wide, terminated by a long, taillike point. The upper surface is a dark, glossy green; rather glaucous beneath, except a strip about one-fourth of its width near one margin, which is green. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 216.)

42649 to 42673—Continued.

"This is said to be the hardiest species in Japan, growing as far north as the island of Hokkaido, where the temperature falls below zero Fahrenheit. Its culms are extensively used for fan making, and millions of cheap paper-covered fans are made every year from the stems of this species. River banks and the margins of ponds and canals are eminently suited to its growth, and the overflowed lands of the Colorado River in Arizona might be planted to advantage with this species." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 31.*)

42652. *ARUNDINARIA FASTUOSA* (Marl.) Makino.

If not the most graceful, it is the loftiest and stateliest of hardy species, resembling *Arundinaria simonii*, but differing in the short, crowded branches at each joint and in the more tufted habit. The stems are up to 22 feet high and $1\frac{1}{2}$ inches in diameter at the base. The leaves are 4 to 8 inches long, one-half to 1 inch wide, wedge shaped at the base, long and taper pointed; dark, lustrous green above; one side of the midrib beneath glaucous, the other greenish; margins toothed. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 215.*)

42653. *ARUNDINARIA PYGMAEA* (Miquel) Kurz.

The dwarfest of the hardy bamboos, although the stems, when drawn up in a dense mass, will grow 18 inches high. Leaves 2 to $5\frac{1}{2}$ inches long, one-third to 1 inch wide, rounded at the base, rather abruptly narrowed at the apex to a slender point. This little bamboo forms a low, dense carpet over the ground and spreads with great rapidity. Among the dwarf creeping sorts with green leaves, the velvety undersurface of the leaves will best distinguish it. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 218.*)

42654. *ARUNDINARIA MARMOREA* (Mitf.) Makino.

A very pretty, well-marked bamboo, distinguished by the marbled stem sheaths and stems remaining unbranched the first season and by the apex of the leaf being constricted about half an inch from the tip. It spreads very rapidly by underground suckers, forming luxuriant masses, but is liable to injury by winter cold. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 217.*)

42655. *ARUNDINARIA MARMOREA* (Mitf.) Makino.

Var. *variegata*. A form differing from the species only in its variegated leaves.

42656. *SASA ALBO-MARGINATA* (Miquel) Makino and Shibata. Poaceæ.
Bamboo.

A hardy bamboo with stems 1 to $1\frac{1}{2}$, sometimes 3 to 4 feet high, with a single branch at each of the upper joints, leaves narrow-oblong, 4 to 8 inches long, 1 to $2\frac{1}{4}$ inches wide, abruptly tapered at the base and narrowed quickly also at the top to a short, slender point. It forms dense, matted patches and spreads very rapidly. While it is pleasing in summer

42649 to 42673—Continued.

and early autumn, the habit of decaying at the leaf margins spoils it later. This character is not found, so far as I know, in any other hardy species. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 220.)

42657. *BAMBOS QUADRANGULARIS* Fenzl. Poaceæ.

Bamboo.

A bamboo which grows to a height of 30 feet in a wild state, but is usually 6 to 12 feet high in Europe. Stems round when young, but distinctly four sided, with rounded corners, when half an inch or more thick. It is best distinguished in the younger stages by curious little spicate protuberances at the joints. Leaves rich green, 4 to 8 inches long, one-half to 1 inch wide. It is, unfortunately, not very hardy. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 231.)

"The sheath is very thin and delicate and more open than in most bamboos, gaping from the base and leaving the greater part of the internode uncovered. The wood of this species is too weak to make it of any great value, and its sensitiveness to frost is too great to enable one to class it among the hardy sorts. It is, however, a decorative plant and worthy of repeated trials in the frostless regions of America. It is said that roots will form easily from the lower nodes of the square bamboo if the portion bearing these nodes is buried in the soil. This would facilitate propagation if the statement proves correct." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 34.)

42658. *BAMBOS NANA* Roxb. Poaceæ.

Bamboo.

A dwarf bamboo with stems 1 to 2½ feet high, most of them about as thick as a lady's hatpin, zigzagged. Leaves arranged in two opposite rows; three-fourths to 2½ inches long, one-sixth to one-third of an inch wide, rounded at the base, bright green above, slightly glaucous beneath. Its dwarf, erect stems and tiny, distichously arranged leaves easily distinguish it from all other hardy bamboos. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 231.)

42659. *PHYLLOSTACHYS BAMBUSOIDES CASTILLONIS* Marliac. Poaceæ.

Bamboo.

This has the most beautifully colored stems of all hardy bamboos. The curious alternation of green and yellow, together with the often variegated leaves, make it very distinct. According to Dr. Stapf, of Kew, there is nothing in its floral characters to distinguish it from *Phyllostachys nigra*. In vegetative character, however, it is very near *P. bambusoides*. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 150, as *P. castillonis*.)

"The contrast between the golden yellow of the stems and the green stripes on the young shoots is one of the prettiest effects imaginable. The species grows occasionally over 30 feet high in Japan." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 29.)

42660. *PHYLLOSTACHYS PUBERULA* (Miquel) Munro. Poaceæ. Bamboo.

A very graceful and luxuriant bamboo, reaching in favorable situations 14 feet in height. It is laden, when in good health and well established, with heavy plumose masses of foliage, which make the outer stems arch outward. Leaves are uniform in size and from 2 to 3½ inches long and

42649 to 42673—Continued.

from one-third to five-eighths of an inch wide, tapering at the base to well-developed stalks one-eighth of an inch long; dark lustrous green above, glaucous beneath. In the richness of its verdure combined with a remarkable elegance of form, this bamboo is probably the loveliest of all its kind. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 150.)

42661. *PHYLLOSTACHYS PUBESCENS* Houzeau. Poaceæ. Bamboo.

This is one of the stoutest of our hardy bamboos, the stems reaching sometimes nearly 20 feet in height and bending somewhat stiffly; 1½ inches in diameter, deep yellow when mature. Leaves 2 to 5 inches long, one-fourth to three-fourths of an inch wide, tapering or rounded at the base, slender pointed, dark green above, glaucous beneath. The stems when young grow with great rapidity, sometimes nearly 1 foot in 24 hours in England—more in hotter climates. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 151, as *P. mitis*.)

"The largest hardy species in Japan, growing to a height of over 50 feet and producing, not uncommonly, culms over 6 inches in diameter. The culms are gently curved shortly after leaving the ground, while those of other sorts with which it might be confused rise straight from the base. Its sheaths are of a light-brown color, marked with dark umber-brown blotches and round dots and covered with bristles. The sheath spreads right and left from the base of the pseudophyll and is fringed throughout with hairs which are straight when they lie between the pseudophyll and the stem, but curled on the right and left sides where they are free to develop. The internodes are generally shorter than those of the other large species, and the leaf sheaths are fringed at the insertion of the leaf with a number of rather coarse hairs. The branch buds are purplish brown and strongly marked. This is the great edible bamboo of Japan and China, the method of cultivation of which has been described." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 27.)

42662. *PHYLLOSTACHYS PUBESCENS HETEROCYCLA* (Carr.) Houzeau. Poaceæ. Bamboo.

The curious so-called tortoise-shell bamboo. The joints of the stems near the base do not circle them in the ordinary way, but take diagonal directions, the normal space between the joints being suppressed at each side alternately. Thus the scars join at opposite sides alternately for 1 or 2 feet up the stem, when it assumes its normal form and the scars become rings. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 151.)

42663. *PHYLLOSTACHYS PUBERULA NIGRA* (Lodd.) Houzeau. Poaceæ. *(P. nigra* Munro.) Bamboo.

One of the handsomest of the bamboos, very distinct because of its black stems, which vary from 10 to 20 feet in height and from half an inch to 1½ inches in diameter; at first green, they become with age quite black. Leaves in plumose masses, usually 2 to 3½ inches long, one-fourth to five-eighths of an inch wide (sometimes larger); of thin texture, dark green above, rather glaucous beneath. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

42649 to 42673—Continued.

"The culms when young are covered with dark brown to purple spots, which spread as it grows older until the whole culm becomes dark brown, almost black, except just below the nodes, where there is an ash-gray line. This dark color at once distinguishes the species from all other Japanese sorts. Branch buds are brown, mottled with black. There is a great variation in the intensity of this dark color of the culms, and this is said to vary with the kind of soil upon which the plants are grown and the amount of sunlight to which they are exposed. . . . Nothing could exceed the delicate beauty of the groves of this species which are to be seen near Kyoto. Their dark stems, ash-gray nodes, and light-green foliage make them unique among decorative plants. The uses of this species are limited to the manufacture of furniture, numerous household articles, and fancy fishing poles, for all of which these black bamboos are peculiarly suited." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 29.*)

For previous introduction, see S. P. I. No. 37555.

42664. *PHYLLOSTACHYS BAMBUSOIDES* Sieb. and Zucc. Poaceæ.

Bamboo.

This is one of the finest hardy bamboos, very hardy and free growing, with stems 10 to 18 feet high, and long branches. Stem sheaths are pinkish when young, conspicuously mottled with deep purple. The leaves are among the largest in the hardy *Phyllostachys* group, varying from 2½ to 6 inches long, one-half to 1¼ inches wide, bright green above, glaucous beneath. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

"The arrow bamboo is that of which the stems are still employed in the manufacture of the fine Japanese arrows used generally for archery purposes. It is not very commonly seen in gardens, so far as observed, even in Japan, and the arrow makers, it is said, get their main supply of stems from wild plants. There are some of these manufacturers in the town of Shidzuoka, but the demand for arrows is so small that they are doing a poor business. This species is distinguished from others by the fact that it does not have an actively creeping rootstock. Each plant forms a separate small clump by itself. The hardness of the culms, their small cavity, and the smoothness of the nodes, as well as their small size, are characteristics that well adapt them for arrow making. This is believed to be a hardy species, and it is quite unlike the ordinary bamboos in appearance." (*D. G. Fairchild, Japanese Bamboos, Bur. Plant Indus. Bul. 43, p. 30.*)

42665. *PHYLLOSTACHYS BAMBUSOIDES MARLIACEA* Houzeau. Poaceæ.

Bamboo.

A variety of *Phyllostachys bambusoides*, distinguished by the curious wrinkling of the stems, especially toward the base. It does not appear to be so vigorous as the species, but behaves more like *P. mitis* in regard to hardiness. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 152.*)

42666. *PHYLLOSTACHYS KUMASACA* (Zoll.) Munro. Poaceæ. Bamboo.

A pretty bamboo, suitable for a damp spot in the rock garden, being of a neat, tufted habit. It is one of the most distinct of all hardy bamboos, especially in its sturdy, zigzag stem (1 to 2 feet high, very much

42649 to 42673—Continued.

flattened between the joints), the great proportionate width of the leaves, their length of stalk, and the uniformly short branches which occur three or four at each joint, 1 to 2½ inches long, bearing one to three narrowly ovate leaves 3 to 4 inches long and three-fourths to 1 inch wide. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

42667. *PHYLLOSTACHYS AUREA* A. and C. Rivière. Poaceæ. Bamboo.

A bamboo somewhat resembling *Phyllostachys mitis*, which is, however, a taller species without the crowded joints at the base of the stem and without the swollen band beneath the joint, which is so distinctive a character in *P. aurea*. The stems are pale yellowish green, 10 to 15 feet high, stiffly erect, growing in tufts and spreading slowly. Beneath each joint there is a curious swollen band about one-fourth of an inch wide. The leaves are 2 to 4½ inches long and one-third to seven-eighths of an inch wide. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 149.)

"Mr. Mitford remarks that this species should be planted in large, bold masses for good landscape effect, for if single plants are set out they send up shoots only near the mother culm and produce a switch-like effect. The shoots of this species are edible, according to the Japanese books, and are of even better flavor than those of *P. mitis*; but this variety does not appear to be grown for food." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 30.)

42668. *BAMBOS VULGARIS* Schrad. Poaceæ. Bamboo.

An Indian bamboo, with bright-green stems, 20 to 80 feet high and with numerous branches weighted with dense foliage. Leaves usually 6 to 10 inches long, two-thirds to 1½ inches wide. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 448.)

"A species growing in Satsuma, the southern province of Japan, but which is not hardy at Yokohama. It is propagated differently from the hardy sorts, as new shoots are borne from the base of the culm as well as from the rhizome. This species is said to be easy to propagate because of this character, but it will probably have a chance to succeed in the United States only in subtropical Florida and Texas, where it will require a good soil, rich in humus." (D. G. Fairchild, *Japanese Bamboos*, Bur. Plant Indus. Bul. 43, p. 34.)

42669. *BAMBOS ARGENTEO-STRIATA* Regel. Poaceæ. Bamboo.

May be the same golden bamboo known as *Bambos vulgaris* var. *aurco variegata*. This resembles the species, but has canes of rich golden yellow color, penciled with green. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 448.)

42670. *BAMBOS NANA ALPHONSE-KARRI* (Mitf.) Makino. Poaceæ.

Bamboo.

A variegated form of *Bambos nana*, with young stems striped with white and pink, older stems yellow with broad green stripes. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 449.)

42649 to 42673—Continued.

42671. *BAMBOS VITTATO-ARGENTEA* Hort. Poaceæ.

Bamboo.

A variegated or blue bamboo of gardens, the taichochiku of the Japanese. Often attains the size of *Bambos argentea*, but leaves are still more blue on the under side and smaller and more delicate. They are striped and edged with white. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 449.)

42672. *BAMBOS AUREO-STRATA* Regel. Poaceæ.

Bamboo.

A slender, low-growing bamboo 1 to 2 feet high, with lanceolate or somewhat ovate leaves, pointed at the apex and narrowed at the base into a short petiole. (Adapted from *Munro, Monograph of the Bambusaceæ*, in *Transactions of the Linnean Society of London*, vol. 26, p. 116.)

42673. *BAMBOS SENANENSIS* Franch. and Savat. Poaceæ.

Bamboo.

A Japanese bamboo, 10 or more feet high, with rather large, broad leaves and sheaths of deep-green hue. (Adapted from *Satow, Cultivation of Bamboos in Japan*, p. 65, 1899.)

42674 and 42675. *DIOSPYROS KAKI* L. f. Diospyraceæ.

Kaki.

From Okitsu, Japan. Cuttings presented by Prof. Ishiwara, director, Government Horticultural Experiment Station. Received May 8, 1916. Notes by Mr. T. Kiyono, Semmes, Ala.

42674. "No. 72. *Kuharu*. Sweet. Kumamoto Province."42675. "No. 73. *Gauzan*. Sweet. Kumamoto Province."42676. *HEDYSARUM BOREALE* Nutt. Fabaceæ.

From Saskatoon, Saskatchewan, Canada. Presented by Mr. W. E. Lake, University of Saskatchewan. Received May 1, 1916.

A perennial leguminous herb with compound leaves and showy racemes of many magenta to white flowers. Native of Newfoundland and northern New England to Alaska.

"The possibility of crossing this with *H. coronarium* is suggested, in view of the great forage value but tender character of the Mediterranean species." (*Fairchild*.)

For previous introduction, see S. P. I. No. 41555.

42677. *LATHYRUS PRATENSIS* L. Fabaceæ.

Yellow vetchling.

From Dublin, Ireland. Presented by Sir F. W. Moore, director, Royal Botanic Garden, Glasnevin. Received May 2, 1916.

A low straggling perennial, having leaves of two bright green leaflets and four to nine flowered peduncles of yellow flowers. Adventive in fields and waste places from New Brunswick to New York and Ontario; native of Europe and Asia.

For previous introduction, see S. P. I. No. 32193.

42678. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ.

Grass.

(*Zoysia pungens* Willd.)

From Taihoku, Formosa. Plants presented by Mr. M. Takata, Department of Productive Industries. Received May 6, 1916.

Grass from the Far East, often known as *Zoysia pungens*. Seems to be succeeding in Florida as a lawn grass.

For previous introduction, see S. P. I. No. 42389.

42679 to 42681.

From Kieff, Russia. Procured through Messrs. St. Przedpelski and T. Antoniewicz. Received May 3, 1916.

42679. *AMMODENDRON CONOLLYI* Bunge. Fabaceæ.

A hardy evergreen, silky leaved shrub from Siberia.

For previous introduction, see S. P. I. No. 31330.

42680. *ELAEAGNUS ANGUSTIFOLIA* L. Elæagnaceæ.

Oleaster.

Small European shrub with silvery foliage.

For previous introduction, see S. P. I. No. 40214.

42681. *LARIX SIBIRICA* Ledeb. Pinaceæ.

Larch.

A Siberian larch, closely related to European larch. Perennial tree, to 90 feet high, with ascending branches. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 886.)

42682. *ARTEMISIA CINA* Berg. Asteraceæ.

Wormseed.

From Petrograd, Russia. Procured through Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 4, 1916.

The plant is a low and straggling undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug *santonica* is collected in July and August by native tribes. It belongs to a perplexing group of species of this difficult genus, variously regarded by different botanists as distinct species or as varieties of the polymorphous species, *Artemisia maritima* L. The drug is composed of the dried unexpanded flower heads, and forms a yellowish green (at length greenish brown) somewhat glossy, mobile mass, having a strong and peculiar, somewhat camphoraceous odor and an aromatic and bitter taste; it is used as an anthelmintic especially for roundworms.

42683 to 42698.

From Paris, France. Plants purchased from Vilmorin-Andrieux Company. Received May 6, 1916. Descriptions adapted largely from Vilmorin, *Catalogue des Plantes*.

42683. *ACTINIDIA CALLOSA HENRYI* Maxim. Dilleniaceæ.

A climbing plant introduced from central China by Wilson. Leaves persistent, coriaceous, lanceolate, finely dentate, 15 cm. long. They are bronze red, passing into a metallic green and in autumn take on a beautiful reddish color. This plant is entirely distinct from its relatives and is remarkable for the size of its leaves. Found by Wilson and Henry in western Hupeh and Szechwan as a climber reaching a height of 7 meters, with fragrant white flowers and greenish ovoid or elongated fruit.

For previous introduction, see S. P. I. No. 34529.

42684. *AMPELOPSIS LEOIDES* (Maxim.) Planch. Vitaceæ.

An Asiatic species, introduced by Wilson, very distinct and remarkable because of its pinnate leaves, composed of five very long leaflets,

42683 to 42698—Continued.

pointed and shining. This plant is very vigorous and may attain several meters in height; it will cover walls and trellises well. It is a southern Japanese species allied to *Ampelopsis megalophylla*.

42685. BUDDLEIA NIVEA YUNNANENSIS (Dop.) Rehd. and Wils. Loganiaceæ.

Of the same group as *Buddleia variabilis*. Branches and lower sides of the leaves whitish. It is remarkable for its very beautiful, delicate mauve flowers, which have a very pleasant perfume and are arranged in a large lengthened spike. Flowers from July to October. Height, 1½ to 3 meters. Wilson says this variety is much more widely distributed than the type and is readily distinguished by its usually solitary terminal panicle and much larger flowers, attaining 5 mm. in diameter; the leaves are usually pubescent above and vary in size and are sometimes nearly entire, coarsely serrate, or sinuately toothed. From western Szechwan.

42686. CLEMATIS ARMANDI Franch. Ranunculaceæ. **Clematis.**

A new climbing Chinese species, exceptional in its strongly persistent, coriaceous, trifoliolate, dark shining blue-green leaves. Flowers pure white, 5 cm. across, in many-flowered axillary panicles. Flowers in April. Climbs to a height of 5 m. or more. Collected by Wilson and Henry in western Hupeh and Szechwan. Called *Wei ling hsien* by the Chinese in Hupeh.

42687. CLEMATIS MONTANA WILSONII Sprague. Ranunculaceæ.

Clematis.

A white-flowered climbing variety, recently introduced from Hupeh, Szechwan, and Yunnan by Wilson. Flowers very abundant, fasciculate, sometimes a little yellowish or rosy on the outside, produced in June and July with generally a second flowering in the autumn. This plant is very superior to its relatives.

42688. CLEMATIS VEDRARIENSIS Hort. Ranunculaceæ.

Clematis.

Obtained at Verrieres by crossing *Clematis chrysocoma* and *C. montana rubens*. This very beautiful hybrid is more vigorous and more branching than the latter. It has preserved the beautiful rose color of the latter, but is a trifle paler. The flowers are also much larger and measure up to 7 cm. in diameter. Flowers in May and June. Height, 5 to 6 meters. The plant is of great value for decorating arbors, trellises, etc.

42689. PYRACANTHA CRENULATA YUNNANENSIS Vilm. Malaceæ.

A new variety from seed received from China by Mr. Maurice L. Vilmorin, differing from the type in its greater vigor, its longer spines, and its less dentate leaves. The fruits of a brighter coral red are smaller but more abundant, and hang on the shrub until January. It attains a height of 1 to 3 meters.

42690. COTONEASTER NAN-SHAN Hort. Malaceæ.

Introduced from China by Mr. Maurice L. Vilmorin. This new species is well characterized by its stiff branches and small foliage. Flowers white, fruits very large, bright red, ripening in October. Serves admirably for the decoration of rock slopes and rockeries. Height, 15 to 20 cm.

42683 to 42698—Continued.

42691. *DEUTZIA LONGIFOLIA VEITCHII* (Veitch) Rehder. Hydrangeaceæ.

Introduced recently from Yunnan, this new *Deutzia* is without doubt the one whose flowers are the largest and the most brilliantly colored. They are of a beautiful rose, with deep lilac coloring inside and out, arranged in numerous small clusters along the branches. They bloom in May. The plant is very vigorous, hardy, flowers very young; is easily forced. It is said to be one of the most interesting novelties introduced from China recently. Received a certificate of merit from the National Society of Horticulture of France.

42692. *LONICERA SIMILIS DELAVAYI* (Franch.) Rehder. Caprifoliaceæ.
Honeysuckle.

A very vigorous new honeysuckle from western China, with long climbing branches, and lengthened, very velvety leaves. The young branches are covered their whole length with odorous flowers, at first white, then yellow, arranged in pairs, and continuing to appear from June until frost, with an abundant flowering in autumn.

42693. *PAULOWNIA DUCLOUXII* Dode. Scrophulariaceæ.

A recently introduced tree from Yunnan, China, differing from the common *Paulownia* in its white flowers, being slightly rosy and without spots. It flowers at the end of winter before the leaves appear.

42694. *POTENTILLA FRUTICOSA VILMORINIANA* Komarow. Rosaceæ.

Introduced from China by Mr. Maurice L. Vilmorin, this new *Potentilla* forms a tufted shrub, very erect, 1 meter in height, with silky, very silvery foliage, and is covered during the whole season with pale sulphur-yellow flowers, larger than those of the species. Very suitable for massing in a shrubbery border.

42695. *RODGERSIA AESCULIFOLIA* Batal. Saxifragaceæ.

A vigorous plant newly introduced from China, with large rhizomes and slender petioles supporting six large, umbellate, oval leaves, heavily veined, and of beautiful dark green, resembling those of the chestnut. Flowers white, in a long panicle, 75 cm. long, appearing in June. Flourishes in cool, half-shaded, peaty soils.

42696. *SYRINGA GIRALDII* Sprenger. Oleaceæ. Lilac.

Originally from the north of China, this lilac, which is still little known, is chiefly remarkable for its early flowering, which takes place in Paris at the beginning of April. The beautiful flowers are white, slightly marked with lilac, in loose thyrses, and as odorous as those of the common lilac. It reaches a height of 3 to 4 meters.

42697. *VIBURNUM CARLESII* Hemsl. Caprifoliaceæ.

A Korean tree recently introduced and little known, reaching a height of about 1 meter; of open habit, with opposite subsessile, rounded pubescent, deciduous leaves, and very odorous white flowers, flushed with rose in terminal umbels, appearing in May. Flourishes in cool, semishady places with little lime; forces very easily; recommended for border for mass plantings of rhododendrons and azalea.

42683 to 42698—Continued.

42698. *VIBURNUM DAVIDI* Franch. Caprifoliaceæ.

Introduced from China through the efforts of Mr. Maurice L. Vilmorin, this new viburnum is one of the most distinct and most remarkable of the genus. It is a low plant, entirely hardy, with large persistent, shining leaves resembling those of a rhododendron, the shoots of the year terminating in an umbel of white flowers, appearing in April. These flowers are succeeded by steel-blue fruits, ripening in autumn. It attains a height of 25 to 50 cm., and flourishes in shady, peaty soil. Received a certificate of merit from the National Society of Horticulture of France in 1913.

42699 to 42706. *HOLCUS SORGHUM* L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Donga, Northern Nigeria. Presented by Mr. C. L. Whitman, Sudan United Mission, London.

"Belonging to the *Shallu* group."

- 42699. Straw-colored glumes, light red seed.
- 42700. Reddish brown glumes, medium red seed.
- 42701. Black glumes, light red seed.
- 42702. Straw-colored to brown glumes, yellow-pink seed.
- 42703. Dark red glumes, light red seed.
- 42704. Straw-colored to brown glumes, light-red seed.
- 42705. Light straw-colored glumes, white seed.
- 42706. Black glumes, white seed.

42707. *ATTALEA COHUNE* Mart. Phœnicaceæ. **Cohune palm.**

From Ceiba, Honduras. Presented by Mr. F. J. Dyer, American consul. Received May 11, 1916.

"It is known as the *Cohune* or *Monaco* palm, these names being variously applied to different stages of its growth. For a series of years it remains acaulescent and barren, its huge leaves rising nearly erect from the ground. Even after the trunk has reached a height of 10 or 15 feet or more, and has long been in bearing, it usually remains covered to the ground with the persistent bases of the sheathing petioles. Finally these are gradually dropped, and the tree shows a clean cylindrical trunk of 30 to 50 feet or more. The blade of the leaf is 15 to 20 feet long, vertical in position, and describing a most graceful curve, its numerous divisions entirely distinct (an inch or more broad and an inch or two apart) and conduplicate at the base. The leaves are used for thatching, but are much inferior to the less divided and flatter leaves of the *Manicaria*. The fruiting spadix is loaded with five to eight hundred or more nuts, which are elliptic-ovate and $2\frac{1}{2}$ inches long, not including the broadly conical beak. The thick bony endocarp incloses usually a single seed, sometimes two or rarely three. (*Asa Gray, Proceedings of the American Academy of Arts and Sciences, vol. 21, pp. 464-465.*)

"The tree producing these nuts is very plentiful in this locality and the yield is quite heavy. I believe that a large business can be developed in extracting oil." (*Dyer.*)

42708 to 42715.

Received from Mr. W. S. Bogdan, in charge of the agricultural experiment station at Krasny Koot, Samara Government, southeast Russia.

"The climate in the lower Volga region, where Krasny Koot is situated, is decidedly semiarid, with long, hot summers and dry, cold winters, and settlers have suffered much from failure of crops on account of introduced seed not being suitable to the locality. Mr. Bogdan has experimented primarily with native species of forage plants and has developed some very promising varieties suitable to local conditions. In certain of our semiarid Western States his selections may prove to be successful." (F. N. Meyer.)

42708 to 42713. AGROPYRON CRISTATUM (L.) Beauv. Poaceæ.

Wheat-grass.

42708 to 42710. Received as *Agropyron desertorum*.

42711 to 42713. [No notes.]

42714 and 42715. MEDICAGO FALCATA L. Fabaceæ.

Alfalfa.

A species closely allied to *Medicago sativa*, common alfalfa; but possessing sickle-shaped pods.

42716. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Tsama melon.

From Johannesburg, Union of South Africa. Procured from Mr. J. Burt Davy, botanist, Agricultural Supply Association. Received May 9, 1916.

The famous forage melon of the Kalahari Desert, which furnishes forage for cattle on the sandy plains, flourishing under temperatures of 110° F. on almost pure sand with very low rainfall. Of no value for table use, but it may be useful in melon breeding.

For previous introduction, see S. P. I. No. 41164.

42717 to 42720.

From Colombia. Presented by Mr. H. M. Curran. Received April 15, 1916.

42717. ARRABIDAEA sp. Bignoniaceæ.

"An ornamental vine, on the Magdalena River, above Calamar." (Curran.)

A bignoniaceous ornamental climbing shrub, native of South America, having small flowers arranged in large terminal panicles. (Adapted from Lindley, *Treasury of Botany*, vol. 1, p. 93.)

42718. MAXIMILIANEA sp. Cochlospermaceæ.
(*Cochlospermum* sp.)

A small tree or shrub having palmately lobed alternate leaves, furnished with long stalks and large yellow flowers in terminal panicles that wither before the leaves make their appearance. The capsular fruit when ripe is in form and size like a pear and opens with three or five valves. The seeds are small, very numerous, and covered with a cottony down. (Adapted from Lindley, *Treasury of Botany*, vol. 1, p. 305.)

42719. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. Algaroba.
(*P. juliflora* DC.)

See S. P. I. No. 42643 for previous introduction and description.

42717 to 42720—Continued.

42720. *TOLUIFERA BALSAMUM* L. Fabaceæ.

Toulu.

(*Myroxylon toluiferum* H. B. K.)

"A small tree from the Magdalena River, above Calamar." (Curran.)

A tropical American tree or shrub of the bean family having unequally pinnate leaves marked with pellucid dots. The flowers are white or rose colored, in axillary or terminal clusters, with a bell-shaped, 5-toothed calyx and a papilionaceous corolla. The fruit is indehiscent, with one or two seeds, and borne on a stalk, the upper part of which is winged. The seeds have a myrrhlike odor. (Adapted from *Lindley, Treasury of Botany*, vol. 2, p. 772.)

For previous introduction, see S. P. I. No. 42272.

42721. *FRAGARIA VESCA* L. Rosaceæ.

Strawberry.

From Ambato, Ecuador. Presented by Mr. Abelardo Pachano, Escuela de Agronomía. Received May 10, 1916.

"This plant is a native of the Andes. Closely related to the *frutilla*, and is known under the name *fresa*. The fruit is much smaller [than *frutilla*] and rather acid in taste, but the plant is highly ornamental and well adapted for garden borders. I have been unable to detect whether these seeds belong to the *F. vesca* or to the *F. reniforme*, as the plants were in very bad condition when they were brought to me." (Pachano.)

42722. *NORMANBYA MERRILLII* Beccari. Phœnicaceæ.

Palm.

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received May 12, 1916.

"*Bonga de China* or *Bonga de Jolo*. A medium-sized palm with graceful, somewhat curved, pinnate leaves, somewhat resembling the common betel-nut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches, the individual fruits being less than 1 inch long. One of our most ornamental medium-sized palms, which thrives remarkably well in Manila." (Merrill.)

42723 to 42729.

From San Martin de Loba, Bolivar, Colombia. Presented by Mr. H. M. Curran. Received April 29, 1916. Quoted notes by Mr. Curran.

42723. *ANNONA* sp. Annonaceæ.

Guanavito.

"*Guanavito*. A low shrub with glossy ornamental leaves and the habits of *Cratægus*. Fruit orange-red, specimens obtained about 2 inches in diameter, flesh rather dry as compared with cultivated varieties. Would make a good hedge. Low lands, in dense thickets."

42724. *COCCOLOBIS* sp. Polygonaceæ.

"Small, round-headed ornamental tree; fruit said to be edible."

42725. *BRITOA ACIDA* (Mart.) Berg. Myrtaceæ.

Guayabo.

"Large-fruited guava; fruit soft, yellow, few seeds, very acid and juicy."

For previous introduction, see S. P. I. No. 28061.

42726. *BIXA SPHAEROCARPA* Triana. Bixaceæ.

Achuete.

The fruits of this species are spherical instead of cordiform, as are those of *Bixa orellana*.

42723 to 42729—Continued.

42727. HYMENAEA COURBARIL L. Cæsalpiniaceæ. Courbaril.

"Large ornamental timber tree. Fruit edible."

42728. SAPINDUS SAPONARIA L. Sapindaceæ. Soapberry.

"A small tree with a heavy crop of fruit, on sandy hills near the river."

For previous introduction, see S. P. I. No. 42038.

42729. STIGMAPHYLLON sp. Malpighiaceæ.

"*Bejuco de sapo*. Ornamental climber, shiny clusters of purple-tinted fruits in great profusion. Grows over forest trees."

42730. PINUS BUNGEANA Zucc. Pinaceæ. White-barked pine.

From Peking, China. Presented by Mr. John V. A. MacMurray, secretary, American Legation, at the request of Mr. F. N. Meyer, of the Bureau of Plant Industry. Received May 6, 1916.

"A very beautiful pine with silvery-white bark; a slow grower, but extremely striking when old. The bark peels off in flakes, like the sycamore, but the foliage is not so dense as that of most other pines." (F. N. Meyer.)

For previous introduction, see S. P. I. No. 41954.

42731 to 42733.

From Issylkul, Akmolinsk Government, Siberia. Presented by Mr. I. M. Karzin. Received May 1, 1916.

42731. TRITICUM DURUM Desf. Poaceæ. Durum wheat.

Velvety.

42732. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

Subvariety *violaceum*. "New race of naked barley, found by me in midst of varieties obtained from China, which were being tested in the experimental field at Deliankakh; and called by Mr. R. Regel, of the Bureau of Practical Botany at Petrograd, *Hordeum karzinianum*." (Karzin.)

42733. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

"Wild lucerne from the steppes of Semiroins Province." (Karzin.)

Received as *M. caerulea* Lessing.

42734 to 42739.

From Petrograd, Russia. Presented by Dr. A. A. Fischer de Waldheim, director, Royal Botanic Garden. Received May 1, 1916.

42734. AVENA BARBATA Brot. Poaceæ. Oats.

An annual grass, with many-nerved glumes, two or three florets to the spikelet, occurring throughout the Spanish Peninsula. (Adapted from *Lázaro e Ibiza, Compendia de la Flora Española, 2d ed., vol. 1, p. 681.*)

42735. AQUILEGIA BREVISTYLA Hook. Ranunculaceæ. Columbine.

A perennial herb with small, twice-ternate leaves and small flowers 12 to 18 mm. long. The blade of the petals is yellowish, shorter than the blue sepals and longer than the blue spurs. An alpine plant of the central Rocky Mountains. (Adapted from *Coulter and Nelson, New Manual of Rocky Mountain Botany, p. 192, 1909.*)

42734 to 42739—Continued.

42736. *AQUILEGIA LACTIFLORA* Kar. and Kir. Ranunculaceæ. Columbine.

A hardy perennial columbine from the Altai Mountains, Siberia; usually about 1½ feet high, with the sepals nearly white or tinged with blue. Desirable species, not much planted. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42737. *AQUILEGIA VIRIDIFLORA* Pall. Ranunculaceæ. Columbine.

A greenish flowered columbine from eastern Siberia. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 340.*)

42738. *FRAGARIA MOSCHATA* Duchesne. Rosaceæ. Hautbois strawberry.

A plant similar to the alpine strawberries, but taller, usually dioecious and more pubescent; the hull strongly deflexed from the fruit; pale red berry. It is cultivated in Europe. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 605.*)

42739. *RIBES GRAVEOLENS* Bunge. Grossulariaceæ.

This species is said by Janczewski to be merely a pubescent-leaved variety of *R. fragrans*. (For technical description, see *De Janczewski, Monographie des Grosceilliers, Mémoires de la Société de Physique et Historie Naturelle de Geneve, vol. 35, p. 343, 1905.*)

42740. *CACARA EROSA* (L.) Kuntze. Fabaceæ. Yam-bean.
(*Pachyrhizus angulatus* Rich.)

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received April 26, 1916.

Received as two varieties, mixed by mistake.

42741. *INDIGOFERA TINCTORIA* L. Fabaceæ. Indigo.

From Paris, France. Purchased from Vilmorin-Andrieux Company. Received April 28, 1916.

The common indigo of commerce.

42742 to 42748.

From Chefoo, China. Presented by Mr. A. Sugden, Commissioner of Chinese Maritime Customs, through Mr. John F. Jewell, American consul, Chefoo. Received May 11, 1916. Cuttings of the following:

42742 to 42747. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

42742. No. 1. Autumn peach. 42745. No. 4. Mountain peach.

42743. No. 2. Green peach. 42746. No. 5. Late green mountain peach.

42744. No. 3. Green peach. 42747. No. 6. A native Chefoo peach.

42748. *PRUNUS* sp. Amygdalaceæ. Prune.

"No. 7. Remarkable Chinese variety. Very productive in its natural state, round, rough, clear firm flesh, *Mirabelle* color, sweet, red juice; ripe in August; very good for tarts, jams, jellies, etc." (*Sugden.*)

42749 to 42758.

From Nancy, France. Presented by Prof. Edmond Gain, director, Botanic Garden. Received April 17, 1916.

42749. *RIBES LOBBII* A. Gray. Grossulariaceæ.

It should be particularly looked for in California, north of San Francisco Bay, and along the coast to British Columbia. The species may be distinguished by its dark purplish red calyx half an inch in length, not counting the ovary, nearly white petals half the length of the stamens, very glandular but unarmed ovary, and especially by the short, oval, and very blunt anthers which are dotted by a few warty glands on the back. These short and blunt anthers are shared with some species but not with others. (Adapted from A. Gray, *American Naturalist*, vol. 10, p. 274.)

42750 to 42757. *RUBUS* spp. Rosaceæ.

Bramble.

42750. *RUBUS DISCOLOR* Weihe and Nees.

A bramble from the western Himalayas at altitudes of 3,000 to 7,000 feet and westward through Afghanistan and Europe to the Atlantic. Flowers pink, about three-fourths of an inch in diameter; fruits small, globose, black.

42751. *RUBUS FASTIGIATUS* Weihe and Nees.

A robust, nearly erect plant with ternate leaves and simple panicles of large, white flowers. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 41, 1881.)

42752. *RUBUS GODRONII* Lec. and Lam.

Red flowering *Rubus* with leaves quite tomentose on the under side. Closely allied to *Rubus diversifolius* and *R. callianthus*. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 41, 1881.)

42753. *RUBUS HIRTUS* Waldst. and Kit.

"A prostrate, sometimes climbing shrub, with the stems covered with stalked glands and hairs, and furnished with straight, bristlelike prickles. Leaflets usually three, occasionally five, on vigorous stems, broadly oval, rounded at the base, shortly pointed, coarsely toothed, dark green and bristly above, very hairy on the veins beneath. Flowers white, produced in large panicles, the main stalk furnished with violet-colored or purple gland-tipped hairs and bristles. Fruit globular; the sepals erect. A common species in Great Britain, very characteristic of the group with glandular hairs and bristles on the inflorescence." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 452.)

42754. *RUBUS LEJEUNEI* Weihe and Nees.

A bramble with procumbent stems and large flowers with red petals and stamens. In thickets at Malmedy. (Adapted from *Bluff and Fingerhuth, Flora Germanica*, vol. 1, p. 683, 1825.)

42755. *RUBUS NITIDUS* Weihe and Nees.

Suberect species with large rose-colored flowers, closely allied to *Rubus cordifolius*, but differing in the colored petals. (For technical description, see *Genevier, Monographie des Rubus du Bassin de la Loire*, p. 342, 1881.)

42749 to 42758—Continued.

42756. *RUBUS RUDIS* Weihe and Nees.

"A shrub with subprostrate or low arching stems of dark purplish color, armed with short decurved prickles, and furnished with numerous stalked glands. Leaves large among brambles, and composed of three or five leaflets. Leaflets whitish downy beneath, becoming greenish, the terminal one oval or obovate, with a slenderly tapered point, doubly toothed. Flowers pink, borne on a loose, wide panicle, the stalks downy and thickly furnished with shortly stalked glands. Fruit small. Common in the south of England and wild in the neighborhood of Kew. Distinguished by its thickly glanded stems and inflorescence. Nearly allied to and sometimes confused with it, but more widely spread northwards, is *Rubus echinatus*." (W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 453.)

42757. *RUBUS WAHLBERGII* Arrhen.

A species said to be midway between *Rubus lindenbergii* and *R. caesioides*. Native in parts of Germany. (For full technical description, see Ascherson und Graebner, *Synopsis der Mittel Europäischen Flora*, vol. 6, pt. 1, p. 646.)

42758. *AVENA LUDOVICIANA* Durieu. Poaceæ.

Oats.

A form apparently closely allied to *Avena sativa*.

42759 and 42760.

From Rochester, N. Y. Presented by Mr. John Dunbar. Received May 17, 1916, seedlings of the following:

42759. *CORNUS PAUCINERVIS* Hance. Cornaceæ.

Cornel.

Shrub 1 to 3 meters tall, white flowers, black fruit. From western Hupeh and western Szechwan. (Adapted from *Plantae Wilsonianae*, vol. 2, pt. 3, p. 577.)

42760. *MALUS GLAUDESCENS* Rehder. Malaceæ.

Crab apple.

"The earliest of the American crab apples to flower, *Malus glaucescens*, is a native of New York and of Ontario and is a treelike shrub or small tree distinguished from the other northern species by the pale lower surface of the leaves and the hairy covering on the outer surface of the calyx of the flower." (Arnold Arboretum, *Bulletin of Information*, new ser., vol. 1, 1915.)

42761 to 42764. *CICER ARIETINUM* L. Fabaceæ.

Chick-pea.

From Barcelona, Spain. Procured through Mr. Carl Bailey Hurst, American consul general. Received April 25, 1916.

42761. "Variety *Andaluz*, superior."

42762. "Variety *Corriente*, 1^a, Andaluz."

42763. "Variety *Andaluz*, extra."

42764. The packages were broken when received and the following varieties were mixed: Type Alfarnate-superior; type Alfarnate-extra; variety Corriente-Andaluz. These are evidently place names only.

42765. ENGELHARDTIA ACERIFLORA (Reinw.) Blume. Juglandaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky.
Received May 16, 1916.

A very tall tree, with compound leaves somewhat like those of the walnut, and inconspicuous flowers disposed in drooping, spicate panicles. These are succeeded by little fruits which are about the size of a pea, each seated on the base of a three-lobed, beautifully veined and colored bract. These are often more than a foot long and hang very gracefully among the foliage. (Adapted from *Lindley, Treasury of Botany, pt. 1, p. 451.*)

**42766. RUBUS ULMIFOLIUS BELLIDIFLORUS (Koch) Focke. Rosaceæ.
Bramble.**

From Amsterdam, Netherlands. Presented by the director, Botanic Garden, University of Amsterdam. Received May 15, 1916.

A very handsome, double-flowered pink bramble, commonly used for planting in England. Each flower produces an extraordinary number of narrow petals, making a gay display in July and August. This bramble is highly recommended for half-shady woodlands.

42767. PAVETTA ZIMMERMANNIANA Valet. Rubiaceæ.

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received May 12, 1916.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber (detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914) make this species of unusual interest. Faber has proved that the leaves of this and of several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum*. The bacteria of this genus almost invariably inhabit the micropyle of the young seed, and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply imbedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of

the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of Pavetta or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semi-Tropics or wherever else the climate will permit of their cultivation." (Fairchild.)

42768 to 42789.

From Madrid, Spain. Presented by the curator, Botanic Gardens. Received May 8, 1916.

42768. AVENA STERILIS L. Poaceæ.

Oats.

So-called animated oats, closely resembling *Avena fatua*, wild oats, but with larger spikelets. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 1, p. 435.)

42769 to 42775. ASPARAGUS spp. Convallariaceæ.

Asparagus.

42769. ASPARAGUS CAPENSIS L.

A shrubby plant with large, spreading prickles; ascending, rather flexuous, woody branches; and branchlets in dense clusters, one-fourth to 1 inch long. Flowers produced only from tips of the branches, and usually solitary, about one-eighth of an inch long. (Adapted from Baker in *Flora Capensis*, vol. 6, p. 263.)

42770. ASPARAGUS OFFICINALIS L.

42771. ASPARAGUS MARITIMUS Mill.

An herbaceous perennial, native to the coasts of Europe and northern Africa. The erect, much-branched stems are round; the subulate, angled cladodes are in fascicles of six to eight; and the small flowers, one-half the length of the pedicel, produce globose fruits. (Adapted from Boissier, *Flora Orientalis*, vol. 5, p. 336.)

42772. ASPARAGUS OFFICINALIS L.

42773. ASPARAGUS SCANDENS Thunb.

A slender, climbing vine up to 6 feet high, with freely branching green stems, the branches with twigs and cladodes in one plane. This ornamental asparagus thrives more in an intermediate house, and is a good decorative plant when grown in strings for table decorations. It is also good as a pot plant. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 1, p. 408.)

42774. ASPARAGUS STIPULARIS Forsk.

An herbaceous perennial, native of the Mediterranean region. It has erect stems with angle-grooved branches, cladodia 2 inches long, and small flowers followed by berries the size of a pea. (Adapted from Muschler, *Manual Flora of Egypt*, vol. 1, p. 230.)

42775. ASPARAGUS TRICHOPHYLLUS Bunge.

A hardy, herbaceous perennial from northern Asia, twining to a height of 6 feet with cladodes like an ordinary asparagus.

42776. CARYOPTERIS MONGHOLICA Bunge. Verbenaceæ.

An ornamental, woody plant grown for its lavender-blue flowers, profusely produced in fall. The flowers are in densely clustered, axillary cymes and in this species less numerous but larger than in the commonly known *C. incana* (*C. mastacanthus*). (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 2, p. 679.)

42768 to 42789—Continued.

42777. *GLEDITSIA CASPICA* Desf. *Cesalpiniaceæ*. Honey locust.

A very spiny tree, 30 to 40 feet high, the spines slightly flattened, 6 inches or more long. The flowers are green, almost sessile, in dense, downy racemes 2 to 4 inches long. Fruit scimitar shaped, about 8 inches long and an inch wide. This species is well worth growing because of its greater sturdiness than the ordinary honey locust and because of the size and number of its spines. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 595.*)

For previous introduction, see S. P. I. No. 42288.

42778. *PINUS* sp. *Pinaceæ*. Pine.

Received as *Pinus paroliniana* Webb [= *P. pyrenaica* Lapeyr.]; the seeds do not agree with our material of this species.

42779. *PYRUS CANESCENS* Spach. *Malaceæ*. Pear.

A probable hybrid between *Pyrus nivalis* and *P. salicifolia*, between which species it is almost intermediate. This tree is very handsome in spring with its very white young leaves, which become shiny dark green above when mature. The fruit is pale green, with much shorter stalk than that of *P. nivalis*. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42780. *RIBES FLAVUM* Berland. *Grossulariaceæ*. Currant.

Janczewski (*Monographie des Grosseilliers, Mémoires de la Société de Physique et Histoire Naturelle de Geneve, vol. 35, page 506, 1907*) refers to this species as a variety of *Ribes aureum*, the common golden, or buffalo, currant of the central and western United States.

42781. *RIBES MULTIFLORUM* Kit. *Grossulariaceæ*. Currant.

This most striking of the red-currant group has yellowish green flowers crowded on slender, pendulous racemes, stems 5 inches long. It is a very good shrub, up to 6 feet high, with perhaps stouter unarmed branches than any other currant. The fruit is roundish, red when ripe; one-third of an inch in diameter, native of southern and eastern Europe. (Adapted from *W. J. Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 405.*)

42782 to 42789. *RUBUS* spp. *Rosaceæ*. Bramble.

42782. *RUBUS HOFFMEISTERIANUS* Kunth and Bouche.

A Himalayan species closely related to *Rubus gracilis* and *R. foliolosus*, but differing from the former in having all the leaflets suborbicular or broadly elliptic, pilose above, and the flowers in compact racemes; and from the latter in the form of the leaflets. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 72, pt. 2, p. 190.*)

42783. *RUBUS INERMIS* Pourr.

This species is listed by Focke as a form under *Rubus ulmifolius*, a very large-branched plant without spines and commonly with ternate leaves. Of unknown origin. (See *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 154, 1914.*)

42784. *RUBUS LEUCOSTACHYS* Schleicher.

A British shrub distinguished by its round, bright pink or white petals and densely felted stems, leaves, and peduncles; the fruit is white and insipid.

42768 to 42789—Continued.

42785. *RUBUS LINDLEIANUS* Lees.

A plant with tall, curving shoots, strong prickles, and cymose clusters of white or pale rose-colored flowers. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 85, pt. 1, p. 132, 1914.*)

42786. *RUBUS RHAMNIFOLIUS* Weihe and Nees.

This species from southern England has thick, leathery leaflets covered beneath with a felt of grayish white down and white or pale pink cup-shaped flowers borne in slender panicles.

42787. *RUBUS SANCTUS* Schreber.

A very variable species between *Rubus rhamnifolius* and *R. gratus*, with strong, arched shoots; leaves composed of five leaflets; elongate racemes of white or pale rose-colored flowers. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 1, p. 136, 1914.*)

42788. *RUBUS THYRSIFLORUS* Weihe and Nees.

A European species, with nearly prostrate, rarely climbing stems; leaves divided into three or five broad, irregularly toothed leaflets; rather small white flowers and small fruit. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica, vol. 83, pt. 2, p. 244.*)

42789. *RUBUS VESTITUS* Weihe and Nees.

A well-characterized, large-fruited species which has, however, in western Europe, a large number of forms, usually of local distribution. (For a complete technical description, see *Ascherson und Graebner, Synopsis der Mittel Europäischen Flora, vol. 6, pt. 1, p. 546.*)

42790. *VITEX LUCENS* Kirk. Verbenaceæ.

Puriri.

From Avondale, Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received May 13, 1916.

"A fine tree, from 50 to 60 feet in height, often called the *New Zealand oak*, on account of the strength and durability of its timber. It is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with large holes, but these do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The holes are made by a soft-bodied grub, which develops into the puriri moth. The leaves of the *puriri* are handsome, being of a bright, glossy green, the leaflets 3 to 4 inches long. The flowers are in axillary panicles, four to eight together, pink or red, irregular in shape, and with exserted stamens. The roots of the *puriri* never penetrate deeply into the ground, but lie near the surface, so that the tree is easily blown over in a gale of wind. It is endemic in New Zealand and is restricted to the northern part of the North Island. It is easily cultivated and flowers more or less all the year round." (*Laing and Blackwell, Plants of New Zealand, p. 350.*)

"The New Zealand *puriri* is one of the most handsome trees in cultivation, and is worthy of more extensive planting. It transplants well, grows rapidly, and makes a compact tree of symmetrical bushy form, with bright glossy-green foliage. It is one of the New Zealand hardwoods used for railway sleepers, and is very durable. The berries when ripe resemble cherries, which tends to add to its beauty." (*Wright.*)

42791. ARTEMISIA CINA Berg. Asteraceæ. Worniseed.

From Tiflis, Caucasus, Russia. Presented by the director, Jardin Botanique. Received May 22, 1916.

See S. P. I. No. 42682 for previous introduction and description.

42792. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

From Beira, Mozambique, Portuguese East Africa. Seed presented by Mr. E. H. Heron, Director of Agriculture. Received May 13, 1916.

"A robust tree which has spread spontaneously in the forests of the Philippines, the island of Guam, and the East Indies. It is essentially tropical, while the cherimoya, with the smooth-fruited forms of which it has often been confused, is subtropical. Its fruit is inferior in flavor to both the cherimoya and the sugar-apple (*Annona squamosa*), from the first of which it may be distinguished by its long, narrow, glabrate leaves and from the second by its solid, compact fruit, as well as its larger leaves. From *A. glabra*, with which it is also confused, it may be distinguished by its elongate narrow outer petals and its small, dark-brown seeds. It is common in the West Indies and thrives in south Florida." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 294.*)

See S. P. I. Nos. 18736 and 39887 for previous introductions.

42793 to 42798.

From Leyden, Netherlands. Seeds presented by the director, Botanic Garden. Received May 15, 1916.

42793. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)**42794. MALUS ASTRACANICA Dum.-Cours. Malaceæ. Apple.**

This species is perhaps native of southern Russia and western Siberia. It resembles *Malus pumila* in most fruit characters and in the pubescence of the leaves, but is nearer to *Malus baccata* in the form, serration, and texture of the leaves and in the longer stemmed fruits and leaves.

42795. MALUS sp. Malaceæ. Apple.

Received as *Malus orthocarpa* Lavalley, which appears never to have been published.

42796. PYRUS AMYGDALIFORMIS Vill. Malaceæ. Pear.

A large, rounded shrub or small tree, occasionally 20 feet high. Leaves very variable in shape and size; white flowers 1 inch across appearing in April; fruit orange shaped, about an inch wide, yellowish brown, produced on a short thick stalk. Not especially valuable for the garden except for its picturesqueness when old. Native of the Mediterranean region. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles, vol. 2, p. 273.*)

42797. PYRUS NIVALIS Jacq. Malaceæ. Pear.

A small sturdy tree with woolly, white young shoots and young leaves; flowers pure white, 1½ inches across, produced in April in conspicuous clusters. Fruit 1½ inches or more wide, rounded, yellowish green. This eastern European tree is very beautiful early in the season because of its pure white leaves and numerous flowers. In France the trees are cultivated for their fruits, which are eaten when bletted. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles, vol. 2, p. 289.*)

42793 to 42798—Continued.

42798. *PYRUS SINAI* Desf. Malaceæ.
(*P. sinaica* Dum.-Cours.)

Pear.

This pear, which is related to *Pyrus amygdaliformis*, is supposed to have originated in Asia Minor or the islands of the Grecian Archipelago. Its leaves in spring are white with down, becoming smooth and shiny later. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273.)

42799. *ALPINIA EXALTATA* (L. f.) Roem. and Schult. Zinziberaceæ.
(*Renealmia exaltata* L. f.)

Received through Mr. W. E. Safford, of the Bureau of Plant Industry, May 8, 1916.

"A plant belonging to the ginger family, widely spread in tropical America. In Porto Rico it is commonly known as *Bihao*, or *Vijao grande*. The broad thin membranaceous leaves, usually acuminate at the apex and tapering at the base, are somewhat like those of a canna. The inflorescence is a long simple raceme, with magenta-colored or reddish purple peduncle and bracts and yellow flowers. The fleshy, obovoid, or oval fruit usually borne on a recurved pedicel (when mature) is black at length and yields a dye of some importance." (Safford.)

42800 and 42801. *ARACHIS HYPOCÆA* L. Fabaceæ. Peanut.

From Tsingtau, China. Presented by Mr. Willys R. Peck, American consul. Received May 18, 1916.

42800. "The large ordinary peanut of trade, grown in Shantung Province. This variety was imported into Shantung within comparatively recent years. The writer recollects that some twenty years ago they were a rarity in the province." (Peck.)

42801. "A small wrinkled sort that, I am informed by an American resident from the Southern States, is found in the southern part of the United States and is known colloquially as *goober*. This variety is indigenous, but has, in its turn, become comparatively rare. None were obtainable in this consular district, these seeds having come from Tsinanfu, 250 miles away." (Peck.)

42802. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

From Chungking, Szechwan Province, China. Tubers presented by Mr. E. Widler. Received May 19, 1916.

"The taro is cultivated in Szechwan in summer wherever a good water supply is available. Each plant produces 7 to 15 egg-shaped tubers; they are cooked whole or sliced and fried in sauce of various kinds. The plant has been known since before the Han period." (Widler.)

42803 to 42805.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, Department of Agriculture. Received May 23, 1916.

42803 to 42805—Continued.

42803 and 42804. CUCURBITA PEPO L. Cucurbitaceæ. Pumpkin.

"Seeds of the *Ayote de pelleja* (skin pumpkin) entirely without shell, but solid and good. It is for the temperate and cold highlands of tropical countries only; does not produce fruits in Philadelphia or Florida." (Wercklé.)

42805. MEIBOMIA sp. Fabaceæ.

42806. GOSSYPIUM sp. Malvaceæ. Caravonica cotton.

From the city of Guatemala, Guatemala. Presented by Mr. S. Billow. Received May 10, 1916.

"During the year 1912 I procured some seed grown from plants near the Pacific Ocean, at an altitude of about 300 feet. When I returned to Guatemala after my last visit to the States, I arranged to put in an experimental plat and planted some of this seed in October, 1913, but owing to many plants not showing the characteristics claimed for Caravonica cotton I exterminated them, only saving those which appeared to possess the true strain. These plants in about eight months gave the first crop, from which I obtained a very good quality of seed. The plants were in a private garden near the city, the altitude being 5,000 feet. I planted about an acre in July, 1915, and last month the plants commenced to have matured bolls, some of the plants having as many as 250 on them. During the time between planting and fruiting we had some very dry as well as cool weather, the thermometer falling to 45° F., and while it apparently retarded the growing of the plants it did not seem to have any effect otherwise." (Billow.)

42807. PROSOPIS VIDALIANA Naves. Mimosaceæ. Aroma.

From Manila, Philippine Islands. Presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 22, 1916.

"Considerable interest and argument has occasionally arisen with regard to the *aroma*, since many people casually acquainted with the Hawaiian *prosopis* species have insisted that our *aroma* is identical, hence have called it *algaroba*. Mr. Merrill, of the Bureau of Science, upon his return from his recent visit to the United States, secured adequate botanical material of the *Prosopis juliflora* in Honolulu for comparison with our so-called Philippine species. Mr. Merrill maintains that inasmuch as our species has much larger leaves and leaflets and the entire absence of the sweet substance in the pods characteristic of the Hawaiian form, the sinking of the *aroma* into *P. juliflora* is a serious mistake, although practiced by many reputable botanists. Our Mr. H. J. Gallagher, who has had extensive experience both in Hawaii and here in feeding animals, is of the opinion that the *aroma* is of considerable importance as a food for animals, citing his experience in Batangas Province in the southern part of Luzon. During the 11 years we have been observing the *aroma* its spreading has been quite noticeable, but it apparently tends to follow the sandy coast regions, yet does spread slowly up over the hillsides. The objection to the *aroma* is the presence of the long sharp thorns, which are much more pronounced than on the *P. juliflora* in Hawaii. Nevertheless, in Hawaii the thorns apparently vary with individuals, being longer on some trees than on others." (Edwards.)

42808. STROBILANTHES FLACCIDIFOLIUS Nees. *Acanthaceæ*.

From Canton, China. Presented by Mr. P. R. Josselyn, American vice consul in charge. Received May 23, 1916.

"The only dye plant at all extensively grown in Szechwan to-day is *Strobilanthes flaccidifolius* (*tienhua*), which produces an indigo. In certain parts of the Chengtu Plain this is grown in quantity, and the same is true of the district of Mienchou and elsewhere, but its cultivation is on the decline. It is planted on ridges which are kept flooded between. When the plants are about 3 feet tall they are cut down and the leafy shoots placed in concrete pits full of cold water. After steeping for about five days the stems are removed, leaving a green-colored water. Slaked lime is placed in the water to precipitate the indigo. The water is allowed to drain off, and the dye is found deposited at the bottom of the pit." (*E. H. Wilson, A Naturalist in Western China, vol. 2, p. 86, 1914.*)

42809. ALBIZZIA LEBBECK (L.) Benth. *Mimosaceæ*. **Lebbeck tree.**

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, Gizeh Branch, Ministry of Agriculture. Received May 23, 1916.

"The lebbek of Egypt is a large spreading deciduous tree which grows wild in the forests of India, where it is known as the *siris* tree. Its leaves are composed like those of the honey locust. The greenish yellow flowers are in heads of three or four together, and these are followed by strap-shaped yellowish brown pods 6 to 12 inches long and three-fourths to 1½ inches wide. The trunks of the mature trees are smooth with light-colored bark. The sapwood is white and the heartwood hard, brown mottled with darker longitudinal streaks. The wood seasons and works well and is durable. In many respects the lebbek tree is an ideal one for southern roadsides. It grows rapidly, produces a dense shade, thrives in soils which contain little moisture, and is as easily transplanted and propagated by cuttings as a willow. Large trees can be dug up, severely pruned back, and set out with very little risk of their dying. The crowns and irregular branches of the tree are unsymmetrical enough to relieve that monotony incident to long rows of such trees as the Lombardy poplar so common in Italy and Chile and in Utah, or the cypress so continually met with about north Italian cities. I have not been able to satisfy myself as to the hardiness of the lebbek tree, since such forests as are reported to have occurred in Cairo have been at long intervals. The probabilities are, however, that it will withstand slight frost, and experiments to test its hardiness are worthy of being thoroughly made. It may succeed, therefore, in southern California, Arizona, and Florida, possibly also in Texas and Louisiana." (*D. G. Fairchild, The Lebbek or Siris Tree, Botany Cir. 23, pp. 1-4.*)

42810. FRAGARIA CHILOENSIS (L.) Duchesne. *Rosaceæ*.

Strawberry.

From Chile. Presented by Mr. L. J. Kenna, American consul general, Valparaiso, who secured them from Mr. Robert Christie, Castro, Chile. Received May 26, 1916.

"Strawberry seed from Cúcao, west coast of Chiloe Island, Chile, March, 1916." (*Christie.*)

42811. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Los Angeles, Calif. Presented by Mr. Charles F. O'Brien. Received June 2, 1916.

"Cuttings from the tree on my ranch at Beverly Hills. Under the stimulus of heavy pruning last year and ample irrigation, the tree this year produced more than 300 pounds of fruit. More than 100 of these fruits weighed from 1 to 2 pounds. We found that this tree comes true to seed, apparently for the reason that there is nothing in the neighborhood with which it can cross. We have some of the young trees now fruiting, and the fruit is apparently identical. This tree originally came from Peru, and I consider this fruit superior to the Mexican variety." (*O'Brien.*)

42812. BERTHOLLETIA NOBILIS Miers. Lecythidaceæ. Brazil nut.

From Brazil. Purchased from Hills Brothers Co., New York. Received May 1, 1916.

"We have lately received a letter from our representatives in Para, from which we quote: 'The tree is grown from the ordinary nut pod, which must be planted intact with the eye uninjured, from which, we understand, only one nut germinates. There are no other seeds from which the plant can be grown. The writer has never succeeded in growing a Brazil-nut tree, although he has made many attempts.' This nut is grown on the Amazon River in South America and has become an article of commerce." (*Hills.*)

42813. MAMMEA AMERICANA L. Clusiaceæ. Mamey.

From Mompos, Bolivar, Colombia. Seeds presented by Mr. H. M. Curran. Received June 3, 1916.

"Large tree, fruit 4 to 6 inches in diameter, irregular but rounded in form. The two seeds in each fruit separate easily. Rather thin, bright yellow flesh, rather tough, with pleasant slightly acid flavor." (*Curran.*)

For previous introduction, see S. P. I. No. 37814.

42814. NEPHELIUM LAPPACEUM L. Sapindaceæ. Rambutan.

From Buitenzorg, Java. Presented by Dr. and Mrs. A. Hagedoon. Received June 3, 1916.

"Seeds of one of the finest *kapoelasans* (hairless rambutan). The fruits we took them from were of exceptionally good taste, flesh sweet to the stone, and stone as free as any we saw; fruits very large, dark red." (*Hagedoon.*)

See S. P. I. No. 42384 for fuller description.

42815. SOLANUM BULLATUM Vell. Solanaceæ.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Hunnicutt. Received April 10, 1916.

"*Capoeira branco.* Relished by cattle as well as by horses. It seems to have no poisonous effect whatever on the stock eating it." (*Hunnicutt.*)

A South American plant which may possibly be valuable as a forage plant because of its large percentage of protein. Analyses of the leaves and branches show 20 to 28 per cent of protein in the leaves and 14.06 per cent of protein in the branches. (See *Journal of Heredity*, vol. 10, p. 185.)

42816. Gossypium sp. Malvaceæ.**Cotton.**

From the Canal Zone. Presented by Mr. S. P. Verner, Cristobal. Received June 5, 1916.

"From Arcia, Perez Place, Colon, Panama. It is interesting because it has the habit of opening in the dry season, which all cotton here does not have." (Verner.)

"The fiber is fine and of good quality, with a length of $1\frac{1}{4}$ to $1\frac{3}{8}$ inches, and would undoubtedly find a market if produced in sufficient quantity." (O. F. Cook.)

42817. Coriaria thymifolia Humb. and Bonpl. Coriariaceæ.

From Ambato, Ecuador. Presented by Prof. Abelardo Panchano, Ambato Agricultural School, through Mr. Frederic W. Goding, American consul general, Guayaquil. Received June 7, 1916.

"This Coriaria is known under the Quichua name *piñan*, but in the northern provinces the plant is talked about as *Shanzhi* or *Zhanzhi*. Its berries are rather poisonous if eaten in some quantity, as I had reason to verify when a boy. The bark and the roots are rich in tannin, as is the case in the *Coriaria rufifolia* of the European shores of the Mediterranean Sea. The ink obtained from the fruit has a beautiful violet color that changes to black and, within a few hours, to reddish; it has an ancient fame of being indelible, and we believe this ink would be very good if we could, by some means, fix its color. It is said that during the colonial times a Spanish ship sunk, and it was possible to save some papers after they had been under the water because they had been written with *Shanzhi* ink. It is added that there was a king's order to write with this ink all papers of importance." (Panchano.)

42818 and 42819. Hibiscus sabdariffa L. Malvaceæ. Roselle.

From Donna, Tex. Presented by Mr. Eltweed Pomeroy. Received June 6, 1916.

42818. "Special bright red, crop of 1915. This blossoms very early and rather high up and may ripen fruit where the regular crop would be cut off by frost. Of course, this is only a supposition which needs proving." (Pomeroy.)

42819. "Special dark red, crop of 1915. This blossoms low down and is not very early in blossoming, but it is so protected by the branches that it may escape frost where the fruit borne higher up and more on the outside might be frosted." (Pomeroy.)

42820. Begonia sp. Begoniaceæ.

From Rama, Nicaragua. Presented by Mr. Carlos Berger. Received June 7, 1916.

"Seeds of a plant which has some resemblance to *Hydrastis canadensis*. The Indians use the rhizome as a violent emetic in case of snake bite, poisonings, etc., and it acts so strongly that it produces the vomiting of blood in certain doses. The leaves are healing and are used in swellings and skin eruptions. It is curious that the land turtles are crazy for the leaves of this plant, and if there are any of such turtles around, you might be sure to find them near this plant." (Berger.)

42821 to 42823.

From Nanking, China. Seed received through Mr. John H. Reisner, at the request of Rev. Joseph Bailie, University of Nanking, May 23, 1916.

42821. *ACER BUERGERIANUM* Miquel. Aceraceæ. Maple.

"Yah feng. We do not know the name of this maple. The tree attains a large size. The seeds were gathered at Ningkwofu, in Anhwei Province, China." (Reisner.)

42822. *LIQUIDAMBAR FORMOSANA* Hance. Hamamelidaceæ.

"Feng hsiang shu."

Tree up to 120 feet in height, having somewhat the appearance of the sweet gum, *Liquidambar styraciflua*, but smaller, usually 3-lobed leaves.

For previous introduction, see S. P. I. No. 34583.

42823. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ. Pistache.

"Huang lien shu."

A tall, deciduous, dioecious tree, strikingly ornamental, with large pinnate leaves, red when young, changing to vivid green in summer and flaming scarlet and yellow in fall. Berries inedible.

For previous introduction, see S. P. I. No. 40662.

For an illustration of an avenue lined with Chinese pistache trees, see Plate V.

42824. *SYNSEPALUM DULCIFICUM* (Schum.) Daniell. Sapotaceæ.

(*Sideroxylon dulcificum* A. DC.)

From Aburi, Gold Coast Colony, British West Africa. Presented by Mr. R. H. Bunting, Acting Director of Agriculture. Received May 23, 1916.

"A shrub 6 feet high, with slender, glabrous, brownish branches, with rounded, wedge-shaped leaves 4 to 6 inches long, and axillary clusters of whitish flowers. Native of Upper Guinea." (Oliver, *Flora of Tropical Africa*, vol. 3, p. 502, 1877.)

42825 and 42826.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received May 25, 1916.

42825. *CHLORIS PARAGUAIENSIS* Steud. Poaceæ. Grass.

Grasses of this genus are usually perennials often cultivated as ornamentals on account of the attractive inflorescence. Rhodes grass and star-grass are related species.

For previous introduction, see S. P. I. No. 41897.

42826. *LYSICARPUS TERNIFOLIUS* F. Muell. Myrtaceæ.

"A myrtaceous tree 40 to 50 feet high, with hard, heavy, elastic timber prettily marked, used for cabinetwork, but more particularly for piles, bridges, railway sleepers, etc. The fiber of the bark is of such superior quality that it has been sought for by rope and paper makers." (Maiden, *Useful Native Plants of Australia*, pp. 565, 627, 1889.)

42827 to 42835.

From Asmara, Eritrea, Africa. Seeds presented by the director, Direzione di Colonizzazione. Received May 23, 1916.

42827 to 42835—Continued.

42827. *ADANSONIA DIGITATA* L. Bombacaceæ.

Baobab.

A medium-sized tree, native of central Africa; famous for the great age and enormous size of trunk which it attains. The pulp of the fruit is edible and the juice is used for making a beverage. The bark produces a strong fiber. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 214, 1914.*)

For previous introduction, see S. P. I. No. 33552.

42828. *ALBIZZIA AMARA* (Roxb.) Boivin. Mimosaceæ.

A medium-sized, unarmed tree, with densely pubescent branches and small, feathery, compound leaves; closely related to the acacias; native of Abyssinia and western India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 301, 1878.*)

42829. *CALPURNIA AUREA* (Lam.) Benth. Fabaceæ.

A tall, leguminous shrub, very rarely treelike, with large, evergreen, compound leaves and showy racemes of yellow flowers, much like Laburnum; appearing in winter. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 2, p. 637, 1914.*)

42830. *CASSIA OCCIDENTALIS* L. Cæsalpiniaceæ.

A glabrous, ill-smelling weed, 60 to 90 cm. high, with short, closely crowded, axillary racemes of yellow flowers; of wide distribution in the Tropics and in the warmer temperatures. The seeds, sometimes called *Negro coffee*, are used in some parts of the world as a substitute for coffee and are said to be a febrifuge. The plant has been used as a remedy for stomach trouble, nervous trouble, asthma, and typhoid fever. The root is especially active and the leaves are used medicinally in many countries. (Adapted from *Safford, Useful Plants of Guam, p. 218, 1905.*)

For previous introduction, see S. P. I. No. 38123.

42831. *CASSIA TORA* L. Cæsalpiniaceæ.

An annual, glabrous undershrub, with even, pinnate leaves and small yellow flowers in pairs or in short, axillary, few-flowered racemes; of very wide distribution in the Tropics. The leaves are mucilaginous and ill smelling; they are said to be aperient. In India they are fried in castor oil and applied to ulcers. The root rubbed with lime juice is a remedy for ringworms. (Adapted from *Safford, Useful Plants of Guam, p. 219, 1905.*)

42832. *HIBISCUS LUNARIFOLIUS* Willd. Malvaceæ.

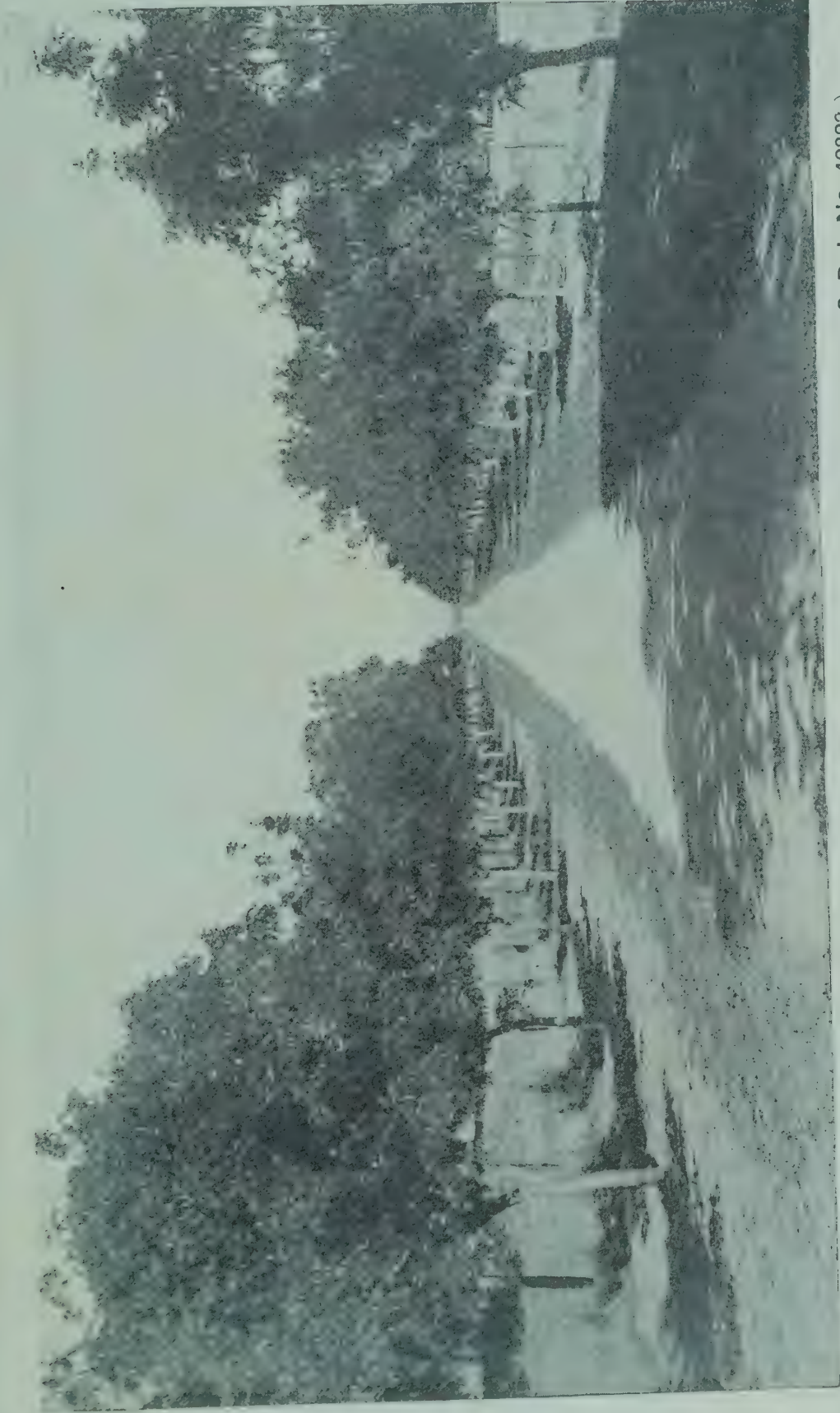
An undershrub with roundish or sometimes obscurely three to five lobed, long, petiolate leaves; and terminal racemose inflorescences of large yellow flowers 2 to 3 inches across. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 202, 1868.*)

42833. *JUNIPERUS PROCERA* Hochst. Pinaceæ.

East African cedar.

A tall conifer, said to be 100 to 150 feet high, with straight trunk; and to yield durable and valuable timber. Native of the high mountains of British East Africa.

For previous introduction, see S. P. I. No. 27505.



AVENUE OF THE CHINESE PISTACHE AT CHICO, CALIF. (PISTACIA CHINENSIS BUNGE, S. P. I. No. 42823.)

These graceful trees form an avenue leading to the Plant Introduction Field Station at Chico, Calif., and are glorious lines of color in spring with their deep wine-red new foliage, and again in fall with their gorgeous autumn-tinted leaves changing from scarlet to yellow as they mature. These trees live to be centuries old and attain a great size. Their usefulness is not confined to their ornamental value, as the timber is much sought for furniture making in China, and the trees show promise as stocks for the edible pistache nut of commerce (*P. vera*). (Photographed by P. H. Dorsett at Chico, Calif. Oct. 31, 1918; P24761FS.)

42827 to 42835—Continued.

42834. *OLEA CHRYSOPHYLLA* Lam. Oleaceæ.

A small tree, noteworthy because of the drab or golden color of the under surface of the leaves; flowers small, in axillary panicles; drupe rather large and blackish, globose or somewhat ellipsoidal. Native of tropical Africa. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2333, 1916.)

42835. *OXYTENANTHERA ABYSSINICA* (Rich.) Munro. Poaceæ. Bamboo.

A large bamboo, 25 to 50 feet high and 1½ to 3 inches in diameter. Reported to have a wide range in Africa. This species has a very different appearance from the remainder of the genus, but the structure of the spiculæ in all the species is very similar. (For technical description, see Col. Munro's Monograph of the Bambusaceæ, in the Transactions of the Linnean Society, London, vol. 26, p. 127, 1870.)

42836. *ANNONA GLABRA* L. Annonaceæ. Pond-apple.

From Manila, Philippine Islands. Seed presented by Mr. H. T. Edwards, director, Bureau of Agriculture. Received May 29, 1916.

Small to medium-sized evergreen tree, sometimes attaining a height of 45 feet; bearing edible fruits the size of a Bellflower apple, with a smooth, leathery skin, green at first, later turning yellow. A swamp-loving tree of the American Tropics, considered of possible value as a stock for other edible-fruited anonas.

42837. *GREVILLEA LAURIFOLIA* Sieber. Proteaceæ.

From Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens, Sydney. Received June 5, 1916.

"From Clarence, Blue Mountains, 88 miles west of Sydney, altitude 3,463 feet; seeds collected April 18, 1916." (*Maiden*.)

A procumbent or trailing shrub with nearly oblong, entire leaves, closely silky underneath, and terminal or lateral, rather dense racemes, 1 to 2 inches long. Native of New South Wales. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 436, 1870.)

42838. *FRAXINUS OXYCARPA* Willd. Oleaceæ. Ash.

From Kieff, Russia. Seeds presented by Messrs. St. Przedpelski and T. Antoniewicz. Received June 1, 1916.

Similar in its leaves (shape size, and leaflets) to *Fraxinus angustifolia* Vahl, but the leaves are always downy about the midrib. Fruits more tapered at the base. The species has a more eastern natural habitat, reaching to Persia, the Caucasus, and Asia Minor.

42839. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ. Grass.
(*Zoysia pungens* Willd.)

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received June 6, 1916.

A creeping grass, important for binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

For previous introduction, see S. P. I. No. 42678.

42840 to 42849. *CUCUMIS MELO* L. Cucurbitaceæ. Melon.

From Petrograd, Russia. Presented by Miss M. I. Kurnakova Danilova, through Mr. Felix Cole, American vice consul, at the request of Dr. C. C. Young, Belen, Tex. Received June 9, 1916. Quoted notes by Miss Danilova.

42840. "Red, soft-fleshed, aromatic, summer melon called *Ananas* (pineapple)."

42841. "Black summer melon called *Urlik*."

42842. "Sweet, aromatic, soft-fleshed winter melon called *Adan*."

42843. "Light green, summer melon called *Aramad*."

42844. "Local *Batrin*, length 27 inches, thickness 3 inches."

42845. "Soft, juicy, summer melon called *Daniar*."

42846. "Mixed summer melons of all kinds."

42847. "Summer melon called *Akurtsi*."

42848. "Sweet, juicy, winter melon."

42849. "The Amir melon, called *Maiskaja*."

42850 to 42853.

From Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received June 12, 1916. Quoted notes by Mr. Wright.

42850. *RYMANDRA EXCELSA* Salisb. Proteaceæ. Honeysuckle tree.
(*Knightia excelsa* R. Br.)

"New Zealand honeysuckle tree, the wood of which is used for veneering purposes in making furniture. Very pretty in the grain. Its flowers are pretty and at the same time odd, coming out of the side of the branches, instead of out of the terminal, as in most cases. A pretty tree and a useful timber for furniture."

42851. *METROSIDEROS ROBUSTA* A. Cunn. Myrtaceæ. Rata.

"Native name *Rata*. This tree grows to over 100 feet high and 6 feet or more through, a hardwood, very durable; is largely used by wheelwrights. Found all over New Zealand. When in bloom is very gorgeous. *Metrosideros robusta* is only found inland in the forests and not on the coast. It is very difficult to gather seed, owing to the height to which it grows before seeding."

42852. *METROSIDEROS TOMENTOSA* A. Rich. Myrtaceæ.

"Native name *Pohutukawa*. This is without doubt one of the most beautiful of flowering trees and is invaluable for bees, the honey from the flowers being of excellent flavor and as white as lard. This tree is to be found skirting the New Zealand coast, on the hillsides, along the sea beach, and even grows out of the sides of the cliffs, overlooking the sea. In many cases you can see trees just above high-water mark, where the roots are frequently washed by the tide and doing well. Like *Metrosideros robusta* it is a hardwood and is used for making knees for boat building; it grows to about 40 feet high. Strange to say, *M. tomentosa* is found in the wild state growing only near the sea, although it grows well inland providing it is protected from frost."

For previous introduction, see S. P. I. No. 34715.

42850 to 42853—Continued.

42853. *PITTOSPORUM TENUIFOLIUM* Gaertn. Pittosporaceæ.

"Hardy, used for hedges. Seed takes a very long time to germinate, often 12 months."

For previous introduction, see S. P. I. No. 30216.

42854. *PHYTOLACCA* sp. Phytolaccaceæ. **Ink plant.**

From Kohu Kohu, Hokianga, New Zealand. Presented by Mr. G. J. Clapham. Received June 10, 1916.

"The pheasants and other birds are very fond of the berries and so distribute the seeds over large areas." (*Clapham.*)

42855 to 42857.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42855. *BACTRIS* sp. Phœnicaceæ. **Rattan palm.**

"Outer coat of fruit edible. The bright red clusters of fruit are very ornamental; 1,000 feet elevation."

42856. *BROWNEA ARIZA* Benth. Cæsalpiniaceæ. **Ariza.**

"Low tree, 20 to 30 feet, in dense forests or along streams or rivers. Very ornamental. Clusters of red flowers borne in profusion; 100 feet elevation."

42857. *THEOBROMA PURPUREUM* Pittier. Sterculiaceæ. **Wild cacao.**

"*Cacao del Monte.* Wild cacao from Cauca River valley. Small tree in dense forest. Said to be edible."

42858. *PSIDIUM GUAJAVA* L. Myrtaceæ. **Guava.**

Grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in recording distribution.

A superior Mexican form with large, pink-fleshed fruits selected at the Miami Field Station. Mr. Simmonds states that these are plants from a tree in the south garden that carried Dr. Webber's guava (No. 1961) budded on seedlings of S. P. I. No. 28134.

42859 and 42860.

From Colombia. Presented by Mr. H. M. Curran. Received June 3, 1916. Quoted notes by Mr. Curran.

42859. *BULNESIA ARBOREA* (Jacq.) Engl. Zygophyllaceæ.

"*Guayacan tola.* Colombian lignum-vitæ. Small ornamental tree. Showy yellow flowers."

42860. *LAWSONIA INERMIS* L. Lythraceæ. **Henna.**

"Ornamental shrub; yellow, very fragrant flowers."

Received as "reseda," a name sometimes applied to this plant in the West Indies. (See *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1830.)

For previous introduction, see S. P. I. No. 39459.

42861 to 42878.

From Santiago, Chile. Seeds presented by Señor Don Ernesto Palacios, Catholic University. Received June 1, 1916. Descriptions adapted from Castillo and Dey, *La Jeografia Botanica del Rio Valdivia*, unless otherwise indicated.

42861. *ACACIA CAVENIA* (Molina) Bertero. Mimosaceæ. Cavan.

A small Chilean tree, known as *cavan*, with exceedingly hard wood, durable in moist soil. The spiny plant makes admirable hedges. The tannin from this species is said to be especially valuable for dyeing.

For previous introduction, see S. P. I. No. 33833.

42862. *ARGEMONE MEXICANA* L. Papaveraceæ. Mexican poppy.

42863. *BERBERIS* sp. Berberidaceæ. Calafate.

42864. *BUDDLEIA GLOBOSA* Hope. Loganiaceæ. Pañil.

The *pañil* or *palquin*, a Chilean shrub, better known as *matico*, owes its name *pañil* to the soft fleshy consistency of its leaves which are much used in curing inflammation and are used with good results for washing wounds. Abundant in Valdivia, where it occurs as a shrub, covered in November with yellow flowers, in globose clusters.

42865. *CALDCLUVIA PANICULATA* (Cav.) Don. Cunoniaceæ. Tiaca.

A Chilean tree, known also as *tiaca*, and by the Araucanians as *quiaca*, which is its only name in Chiloe. The diameter of the trunk, which reaches about 15 meters, is only about 40 cm. The chestnutlike leaves in the young specimens are grouped at the end of the branches, giving the tree an ornamental appearance which is increased by its aromatic flowers. Comparable only to the *luma* (*Myrceugenia fernandeziana*) in the elasticity of its wood, which is suited for carriage building.

For previous introduction, see S. P. I. No. 33853.

42866. *CANNA* sp. Cannaceæ.

42867. *CRINODENDRON PATAGUA* Molina. Elæocarpaceæ. Patagua.
(*Tricuspidaria dependens* Ruiz. and Pav.)

This Chilean shrub is called *chequehue* by the natives, and grows best on river banks. It hardly reaches a height of 3 meters, and has beautiful foliage of lanceolate leaves, which appear in spring, and red flowers.

For previous introduction, see S. P. I. No. 33950.

42868. *DAUCUS CAROTA* L. Apiaceæ. Carrot.

42869. *DRIMYS WINTERI* Forst. Magnoliaceæ. Canelo.

A handsome evergreen shrub, rather tender; young shoots smooth, often tinged with red. Leaves lanceolate, 5 to 10 inches long, bright rather pale green, very aromatic when crushed. Flowers borne in a cluster of loose umbels, from four to seven in each umbel; they are ivory white, fragrant, and about 1½ inches across. Native of South America from Tierra del Fuego to north of the Equator. Known since 1578, in which year its bitter aromatic bark was brought home by Capt. Winter (after whom it is named) in one of Drake's ships from the Magellan Straits. (Adapted from W. J. Bean, *Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 502.)

For previous introduction, see S. P. I. No. 35986.

42861 to 42878—Continued.

42870. *ESCALLONIA REVOLUTA* (Ruiz and Pav.) Pers. Escalloniaceæ.

Frequently called *siete camisas* (seven-bark) in Valdivia. It is rare in the central valley of Chile, but frequent in the mountains of Santiago. In Valdivia it grows in moist soils and rarely reaches 5 meters in height, sending out branches from the base of its thin trunk. Its light white wood is used only for firewood.

For previous introduction, see S. P. I. No. 34405.

42871. *FAGELIA* sp. Scrophulariaceæ.

(*Calceolaria* sp.)

42872. *KAGENECKIA OBLONGA* Ruiz and Pav. Rosaceæ. Bolen.

A Chilean tree which grows in arid places throughout the country. Its leaves are used for treating intermittent fever, and it is also employed at a tonic.

For previous introduction, see S. P. I. No. 34400.

42873. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ. Gourd.

42874. *MAYTENUS BOARIA* Molina. Celastraceæ. Maiten.

This Chilean tree, known as *huirpo* to the Araucanians, attains 12 meters in height, with a slender trunk. It is undoubtedly the most beautiful native tree in its foliage, which trembles and waves in the slightest breeze. Its leaves, which have a great forage value, are most eagerly sought by hungry cattle, like those of the weeping willow. Its wood is often yellow and is hard and elastic. There are varieties the wood of which is finely streaked with red and olive.

For previous introduction, see S. P. I. No. 34621.

42875. *PERSEA LINGUE* (Ruiz and Pav.) Nees. Lauraceæ. Lingue.

This is a very valuable industrial forest tree of large size, handsome, compact, evergreen, has glossy gray-blue-green leaves, and is an extra quick grower; here it is not a delicate plant, but grows quickly in any soil that is wet or very moist, also in water. The wood is light and tough like elm, but takes a very high finish. Its lumber is highly esteemed and is lasting if protected from the wet; it is used for furniture, bodies and poles of carts, ox yokes, etc. The wood is the color of white ash, finishes with a yellowish tinge, takes any stain. Its bark is used solely for tanning and is largely exported to Europe. Every station south is filled to overflowing with thousands of bags of broken bark awaiting transportation. The forests are being stripped, and in a very few years this tree will be very scarce. It is an extra beautiful shade tree. Its leaves are poisonous to animals, especially sheep, which are very fond of them. Medicinally it is a powerful astringent.

See S. P. I. Nos. 3393 and 24208 for previous introductions.

42876. *PSORALEA GLANDULOSA* L. Fabaceæ. Culen.

A medicinal plant, which grows along the river banks, and reaches a uniform height throughout Chile of 2 to 5 meters. Its leaves are used in the preparation of *aloja* (a popular beverage).

42877. *QUILLAJA SAPONARIA* Molina. Rosaceæ. Quillay.

"The *quillay* or *cullay* of the Chileans is a tree from 50 to 60 feet high, with smooth, shining, short-stalked, oval leaves and usually terminal white flowers, either solitary or from three to five upon a stalk. Its bark, called *quillay* or soap-bark, is rough and dark colored ex-

42861 to 42878—Continued.

ternally, but internally consists of numerous regular whitish or yellowish layers and contains a large quantity of carbonate of lime and other mineral matters. It is also rich in saponin, a vegetable soap principle found likewise in plants belonging to the cloverworts, soapworts, and a few other orders; and on this account it is commonly used as a substitute for washing clothes, 2 ounces of the bark being sufficient to wash a dress. It is also said to remove all spots or stains and to impart a remarkable luster to wool; and is used to wash the hair, for which purpose it is powdered between stones, then rubbed with the hands in water, making a foam like soap. A preparation of it has been brought into use in this country for promoting the growth of the hair." (*Lindley, Treasury of Botany, vol. 2, p. 952.*)

See S. P. I. No. 3360 for previous introduction.

42878. *SCHINUS HUIGAN* Molina. Anacardiaceæ.
(*S. dependens* Orteg.)

Huigan.

This characteristic spiny shrub of the arid hills in Chile has fragrant leaves and hard resistant wood, which is much used whenever the size of development permits. The seeds are scattered by the breaking of the epidermis of the fruit. It makes an excellent hedge plant.

For previous introduction, see S. P. I. No. 33823.

42879. *HIBISCADELPHUS GIFFARDIANUS* Rock. Malvaceæ.

Hau Kuahiwi.

From Honolulu, Hawaii. Presented by Mr. J. F. Rock, botanist, College of Hawaii. Received June 5, 1916.

"You may know that of this species there is only one tree in existence and consequently seed is very scarce. I have a number of young trees growing in Honolulu and thus hope to perpetuate the species." (*Rock.*)

"The *Hau Kuahiwi* is a remarkable tree. At first appearance one would think it to be the common Hau (*Hibiscus tiliaceus*), but at closer inspection one can not but wonder at the most peculiar shape of the flowers, which are of a deep magenta, and the large yellowish tuberculate capsules. It is rather a low tree with a not-erect, but rather inclining, trunk of a foot in diameter, with a many-branching round crown. The genus *Hibiscadelphus*, meaning brother of *Hibiscus*, was described by the author and the species named in honor of Mr. W. M. Giffard, of Honolulu, in whose company the writer collected his first specimens. It differs from the genus *Hibiscus* in its very peculiar flowers and mainly in the calyx, which is not persistent with the capsules, but drops together with the bracts as soon as the capsules are formed. Unfortunately, the tree is the only one in existence. It is unique among all Hawaiian plants, and the author is sorry to relate that nothing has been done to protect it. Like many other Hawaiian trees, it will succumb to the ravages of cattle, which inhabit a great many of our native forests. This single tree is found on a small kipuka of 56 acres called Puaulu, on the land of Keauhou, near Kilauea Volcano, at an elevation of 4,200 feet, on the island of Hawaii. It is surrounded by a great many rare trees, which will share its fate sooner or later. Among them are beautiful trees of *Sapindus saponaria*, *Pelea*, *Zanthoxylum*, *Urera*, *Straussia*, *Ochrosia*, etc. The genus consists of three species, the above described one in Hawaii, one on Maui with only a single tree left, and a third on Hualalai, Hawaii." (*J. F. Rock, Indigenous Trees of the Hawaiian Islands, p. 299.*)

42880 to 42887.

From Tokyo, Japan. Presented by Dr. H. Terao, botanist, Imperial Agricultural Experiment Station. Received May 31, 1916.

42880 to 42884. *ORYZA SATIVA* L. Poaceæ. Rice.

42885 to 42887. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

42888 to 42891. HORDEUM spp. Poaceæ. Barley.

From Khartum, Sudan Government. Presented by Mr. E. R. Sawyer, Central Research Farm. Received June 13, 1916. Notes by Mr. Sawyer.

42888. *HORDEUM VULGARE COELESTE* L.

"Abyssinian barley or barley wheat. Cultivated in parts of India as a true hull-less barley."

42889. *HORDEUM VULGARE COELESTE* L.

"*Saggia*. Abyssinian barley."

42890. *HORDEUM VULGARE PALLIDUM* Seringe.

"*Sagia* or *Sagina* barley grown under water-wheel irrigation."

42891. *HORDEUM VULGARE PALLIDUM* Seringe.

"The ordinary Egyptian barley as cultivated on the larger estates."

42892 to 42894. CICER ARIETINUM L. Fabaceæ. Chick-pea.

From Pusa, India. Presented by Mr. Bernard Coventry, Agricultural Advisor to the Government of India. Received June 13, 1916.

For a full discussion of these varieties and their behavior, see "Some Varieties of Indian Gram," by Albert and Gabrielle L. C. Howard, *Memoirs of the Department of Agriculture of India*, vol. 7, No. 6, December, 1915, pp. 231-232, from which the following quoted notes have been taken:

42892. "Type 9. Very late, habit very spreading, with numerous side branches. Leaves very dark green. Flowers white. Seeds white with a yellowish tinge. This type is of interest in that in spite of its deep root system, which is a disadvantage at Pusa, it has so far given the highest monetary return per acre. In this form yield and quality are united in the same type."

42893. "Type 17. Late, habit slightly spreading. Leaves with a yellowish tinge and slight redness on the apices of the teeth of the leaflets, midrib reddish. Flowers pink; standard slightly pink; wings violet. Seeds yellowish brown."

42894. "Type 18. Intermediate in time of maturity, habit erect. Leaves light green with a yellowish tinge, slight reddening on the margins of the leaflets, and deeper reddening on the midrib. Flowers pink; standard light pink; wings violet. Seeds dark brown."

42895. CACTUS sp. Cactaceæ. Cactus.

From Santa Marta, Colombia. Plants collected by Mr. H. M. Curran. Received June 24, 1916.

42896. XIMENIA AMERICANA L. Olacaceæ. False sandalwood.

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission. Received June 17, 1916.

42896—Continued.

"Seeds of what might be called an apricot plum. A fruit the size of a small plum growing on a plumlike tree, but having considerable of an apricot flavor." (Whitman.)

42897 to 42901. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

From San Francisco de Limache, Chile. Plants presented by Sr. Adolfo Eastman. Received May 6, 1916. Quoted notes by Mr. Eastman.

"These are grafted varieties and are already in flower, so that at least next season they will bear."

42897. "*Concha*, meaning shell. The skin resembles tortoise shell."

42898. "*Copucha*, meaning bladder. Has a very smooth skin."

42899. "*Piña*, meaning pineapple. Has the appearance of the pineapple."

42900. "*Sandia*, meaning watermelon. Called so because of its size, like a watermelon."

42901. (No label.)

42902. AMHERSTIA NOBILIS Wall. Cæsalpiniaceæ.

From Sibpur, near Calcutta, India. Presented by the curator of the Royal Botanic Garden, at the request of Mr. Bernard Coventry, Agricultural Adviser of the Government of India, Pusa. Received June 20, 1916.

"Named in honor of Lady Amherst. A medium-sized tree, native of Burma, and considered the most beautiful of all flowering trees. Its immense candle-brumlike sprays of red and yellow flowers, drooping from every branch among the handsome foliage, present an appearance of astonishing elegance and loveliness. It is in flower during the greater part of the year, but its chief flowering season in Ceylon is from January to April, i. e., the dry season. The tree thrives in the moist low country up to 1,600 feet and requires rich and well-drained soil. It does not seem to flourish near the sea, and is rarely met with about Colombo. It produces seed very scantily anywhere, a pod or two occasionally being all that can be obtained, and even these are often infertile. Propagation by layering has therefore to be adopted. Introduced into Ceylon in 1860." (Macmillan, *Handbook of Tropical Gardening and Planting*, p. 291.)

42903 and 42904. STRYCHNOS spp. Loganiaceæ.

From Beira, Mozambique, Portuguese East Africa. Presented by Mr. E. H. Heron, Director of Agriculture. Received June 19, 1916.

42903. STRYCHNOS SPINOSA Lam.

"Vernacular name, *M'Tamba*."

A small tree up to 10 feet high found throughout tropical Africa, in Madagascar, and the Seychelles. This tree is interesting because of its hard-shelled, orangelike fruit, 2 to 3 inches in diameter, with an acid pulp which is wholesome and agreeable, with a clovelike aroma very noticeable when ripe. The seeds contain no alkaloids. This plant has produced fruit in Florida, where it seems to do well.

For previous introduction, see S. P. I. No. 42596.

42904. STRYCHNOS GERRARDI N. E. Brown.

"Vernacular name, *M'Quaqua*."

An East African species from Natal and Portuguese East Africa.

For previous introduction, see S. P. I. No. 34161.

42905 to 42966. TRITICUM AESTIVUM L. Poaceæ.**Wheat.***(T. vulgare Vill.)*

From Pusa, India. Presented by Mr. A. Howard, Imperial Economic Botanist for India. Received May 27, 1916.

42905. Bihar No. 37.	42936. Bihar No. 99.
42906. Bihar No. 38.	42937. Bihar No. 100.
42907. Bihar No. 39.	42938. Bihar No. 101.
42908. Bihar No. 40.	42939. Bihar No. 102.
42909. Bihar No. 41.	42940. Bihar No. 103.
42910. Bihar No. 42.	42941. Bihar No. 104.
42911. Bihar No. 43.	42942. Bihar No. 105.
42912. Bihar No. 44.	42943. Bihar No. 106.
42913. Bihar No. 45.	42944. Pusa No. 106.
42914. Bihar No. 46.	42945. Bihar No. 107.
42915. Bihar No. 47.	42946. Bihar No. 108.
42916. Bihar No. 48.	42947. Bihar No. 109.
42917. Bihar No. 49.	42948. Bihar No. 110.
42918. Bihar No. 50.	42949. Bihar No. 111.
42919. Bihar No. 51.	42950. Bihar No. 112.
42920. Bihar No. 52.	42951. Bihar No. 113.
42921. Bihar No. 53.	42952. Bihar No. 114.
42922. Bihar No. 54.	42953. Bihar No. 115.
42923. Bihar No. 55.	42954. Bihar No. 116.
42924. Bihar No. 56.	42955. Bihar No. 117.
42925. Bihar No. 57.	42956. Bihar No. 118.
42926. Bihar No. 58.	42957. Bihar No. 119.
42927. Bihar No. 59.	42958. Bihar No. 120.
42928. Bihar No. 60.	42959. Bihar No. 121.
42929. Bihar No. 61.	42960. Bihar No. 123.
42930. Bihar No. 62.	42961. Bihar No. 124.
42931. Bihar No. 63.	42962. Bihar No. 125.
42932. Bihar No. 64.	42963. Bihar No. 126.
42933. Bihar No. 65.	42964. Bihar No. 127.
42934. Bihar No. 66.	42965. Bihar No. 128.
42935. Bihar No. 98.	42966. Bihar No. 130.

42967. TRIPSACUM LAXUM Nash. Poaceæ.**Grass.**

From the city of Guatemala, Guatemala. Plants presented by Mr. Juan J. Rodriguez, through Mr. Stuart K. Lupton, American consul, at the request of Mr. H. Pittier, of the Department of Agriculture. Received June 21, 1916.

42968. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Donga, Northern Nigeria. Presented by Rev. C. L. Whitman, Sudan United Mission, through Rev. C. W. Guinter, Kratzerville, Pa. Received June 22, 1916.

"In from 12 to 18 months in this climate this grows into a tree 10 to 20 feet high. The fruit ripens here from November to January, and is quite edible. I trust you may be successful in growing it, though this may be doubtful because of the danger of frost in most parts of the States." (*Whitman.*)

42969. BURSERA sp. Balsameaceæ.

From El Banco, Colombia. Presented by Mr. H. M. Curran. Received June 21, 1916.

"*Madura Platano*. Large ornamental timber tree. Juana Sanches, El Banco, May 15, 1916." (Curran.)

42970. CUCURBITA FICIFOLIA Bouche. Cucurbitaceæ. Alcallota.

From Santa Ines, Chile. Presented by Mr. Walter Fischer, of the Bureau of Commerce, who secured them from Sr. Salvador Izquierdo, Santiago, Chile. Received June 27, 1916.

"Seeds of a pumpkin called *alcallota* obtained May 5, 1916, at the nursery and cannery of Salvador Izquierdo near Nos, about 12 miles south of Santiago, Chile. The fruit of this particular variety is of a creamy-white color, smooth, somewhat oblong in form, of about 7 or 8 pounds' weight, and with quite hard durable rind; evidently a good keeper, at least in that climate, as shown by the good preservation of the fruit, then just a year old, from which the seeds were extracted. This pumpkin is much used in Mr. Izquierdo's cannery for marmalades, the fibrous inside being made into a very sweet preparation, which does not lose its stringy character and which is termed *dulce de alcallota*, and the rind is cooked into a soft creamy paste labeled *crema de alcallota*. Both preparations are very tasty, with a sweet-potato flavor especially noticeable in the cream." (Fischer.)

For previous introduction, see S. P. I. No. 36328.

42971 and 42972.

From Dehra Dun, United Provinces, India. Presented by Mr. Thomas Tracy. Received June 15, 1916. Notes by Mr. Tracy.

42971. BEAUMONTIA GRANDIFLORA (Roth) Wall. Apocynaceæ.

"A mammoth creeper that has run up to the top of the cotton tree [S. P. I. No. 42972]. The blossoms are formed in a cluster; pure white and fragrant; corolla deep and unbroken. The corolla is about 2 inches deep, with an undulating border."

For previous introduction, see S. P. I. No. 33560.

42972. BOMBAX MALABARICUM DC. Bombacaceæ.

Cotton tree.

"Seeds from the cotton tree in front of our house. I think the tree is from Africa. It is very large."

For previous introduction, see S. P. I. No. 40603.

42973 to 42982.

From Jamaica Plain, Mass. Cuttings presented by Prof. C. S. Sargent, Arnold Arboretum. Received June 30, 1916.

42973. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ. Barberry.

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 359, 1913.)

42974 to 42982. ROSA spp. Rosaceæ.

Rose.

42974. ROSA BANKSIOPSIS Baker.

A very common rose in western Hupeh in thickets of low-growing shrubs on mountain slopes at altitudes of 1,300 to 2,000 meters. It

42973 to 42982—Continued.

grows to a height of 3 meters, has rose-red flowers, coral-red fruits, and more or less reddish purple shoots and branches remarkably free from prickles. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 322, 1915.)

42975. *ROSA BELLA* Rehd. and Wils.

This pretty rose from the mountains in northwestern Shansi seems most closely related to *Rosa moyesii* Hemsley and Wilson, which is a much more vigorous plant with stout prickles, larger usually more acute leaflets pubescent beneath, at least on the midrib, globose ovoid flower buds abruptly contracted at the apex, larger flowers, and pinnate sepals. It may also be compared with *R. sweginzowii* Koehne, which differs chiefly in its stouter, much-flattened prickles, the usually double serrate leaflets more or less pubescent beneath, in the globose-ovoid flower buds, and in the pinnate sepals. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 342, 1915.)

42976. *ROSA CAUDATA* Baker.

"This is a rose discovered by Wilson in western China. It is one of the *Cinnamomæ* section of the genus, and is a tall vigorous shrub with stout arching stems covered not very thickly with stout spines, dark-green foliage, and flowers about 2 inches in diameter, in wide, sometimes 25-flowered clusters. The beauty of the flowers is increased by the white markings at the base of the pure pink petals. The fruit is orange-red, an inch long, gradually contracted above into a narrow neck crowned by the much-enlarged calyx lobes. This handsome rose is flowering now for the third year in the arboretum; it is perfectly hardy and an excellent addition to the roses of its class." (*Arnold Arboretum Bulletin of Popular Information*, new ser., vol. 1, p. 42.)

42977. *ROSA CORYMBULOSA* Rolfe.

"A distinct new species with unarmed or sparingly prickly branches and numerous small flowers in corymblike inflorescences. Flowers three-fourths to 1 inch across. Petals broadly obcordate, deep rose above, white at the base. Fruits globose, glandular, about one-third of an inch long, crowned by the persistent sepals. Central China." (*Kew Bulletin of Miscellaneous Information*, New Garden Plants of the Year 1915, p. 80.)

42978. *ROSA DAVIDI* Crép.

An orange-fruited, pink-flowered rose from western Szechwan, China, reaching a height of 5 meters at altitudes of 1,600 to 3,000 meters. It is the species nearest, in China, to *Rosa macrophylla* Lindley of the western Himalayas. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 322, 1915.)

42979. *ROSA HELENÆ* Rehd. and Wils.

"From the seeds of a rose collected by Wilson in western China; a new species of the *Moschata* group has been raised. It is now flowering in the arboretum for the third year, and is a vigorous and perfectly hardy shrub, 5 or 6 feet tall, with slender, arching stems furnished sparingly with short red spines, light-green cheerful

42973 to 42982—Continued.

foliage, and terminal and axillary many-flowered clusters of pure white, delicately fragrant flowers $1\frac{1}{2}$ inches in diameter and borne on short, erect branchlets. It is a plant which will be prized by persons who realize that among the wild roses are some of the most beautiful of all flowering plants and who find a place for them in their gardens." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 39, 1915.*)

42980. *ROSA JACKII* Rehder.

"This beautiful rose was introduced into the arboretum from Korea several years ago by Mr. Jack, and when it flowered was named for him. At about the same time it was named in England *Rosa bakeri* and *R. kelleri*, names which can not be used for it, however, as they had previously been given to other roses. It is one of the *Multiflora* roses with long stems which lie flat on the ground, lustrous foliage, and pure white flowers 2 inches or more in diameter, in wide many-flowered clusters. The flowers are larger than those of the Japanese *R. multiflora*, and it blooms much later than that species. This rose is perfectly hardy and a first-rate garden plant. The hybridizer ought to be able to find in it a good subject from which to raise a race of hardy, late-flowering rambler roses." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 43, 1915.*)

42981. *ROSA MULTIFLORA CATHAYENSIS* Rehd. and Wils.

"*Rosa multiflora*, var. *cathayensis*; it is a hardy, vigorous, and handsome plant with the habit of the Japanese *R. multiflora*. The flowers are from 2 to $2\frac{1}{2}$ inches in diameter and are produced in large, many-flowered clusters, and the large, conspicuous, bright-yellow anthers add to the beauty of the clear pink petals. This rose may well become a popular garden plant. It offers possibilities which the hybridist will undoubtedly take advantage of; and it is of considerable historical interest as the wild original of garden plants cultivated probably for centuries by the Chinese and known in Europe and America for more than a hundred years." (*Arnold Arboretum Bulletin of Popular Information, new ser., vol. 1, p. 35, 1915.*)

42982. *ROSA SWEGINZOWII* Koehne.

A rose from western Szechwan, with deep rose-colored flowers, growing to a height of 5 meters, at altitudes of 2,300 to 3,600 meters. The shoots are thickly covered with short, stout, flattened prickles. (Adapted from *Plantae Wilsonianae, vol. 2, p. 324, 1915.*)

42983 to 42985. *ANANAS SATIVUS* Schult. f. Bromeliaceae.

Pineapple.

From Brisbane, Australia. Plants presented by Mr. J. F. Bailey, director, Botanic Gardens. Received June 28, 1916.

42983. "*Cayenne Queen*, smooth leaf."

42984. "*Ripley Queen*, rough leaf."

42985. "*McGregor*. A variety raised by Mr. E. Smallman, of Ormiston, and named in honor of our immediate past governor, Sir William McGregor." (*Bailey.*)

42986 to 43010.

From Colombia. Seeds collected by Mr. H. M. Curran. Received June 20, 1916. Quoted notes by Mr. Curran.

42986. *ACHRAS ZAPOTA* L. Sapotaceæ. Sapodilla.
(*A. sapota* L.)

"Good quality and early. White or greenish flesh. (Margarita, Mompos, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 38859.

42987. *ANACARDIUM EXCELSUM* (Bert. and Balb.) Skeels. Anacardiaceæ.
(*A. rhinocarpus* DC.)

"*Caracoli*. Large ornamental timber tree. (Margarita, Mompos, Colombia.)"

For previous introduction, see S. P. I. No. 40987.

42988. *ANNONA MARCGRAVII* Mart. Annonaceæ. Guayabana.

"*Guayabana del monte*. Wild anona. Tree in second-growth forest. Edible fruit, 6 inches in diameter. Greenish white fruit, slightly acid. (El Banco, Colombia.)"

42989. *BRITOA ACIDA* (Mart.) Berg. Myrtaceæ. Guayabo.

"*Guayabo*. Tree 20 to 30 feet. Large yellow fruit, few seeds, acid, 3 inches in diameter, white flesh. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 42725.

42990. *CARICA PAPAYA* L. Papayaceæ. Papaya.

"Large-fruited papaya. (Margarita, Mompos, Colombia, May 16, 1916.)"

42991. *LICANIA PLATYPUS* (Hemsl.) Fritsch. Rosaceæ. Chupa.

"*Chupa*. Large fruits, with smooth brown or greenish coat. Soft, yellow, rather dry flesh. Fruit 4 to 6 inches long, 2 to 3 inches in diameter. Tree 40 to 60 feet. Said to bear at all seasons. (Papayal, El Banco, Colombia, May 20, 1916.)"

For previous introduction, see S. P. I. No. 41485.

- 42992 to 42996. *MANGIFERA INDICA* L. Anacardiaceæ. Mango.

"From Papayal, El Banco, Colombia, May 20, 1916."

42992. "*Mango Hobo*. Very large, very yellow, good flavor."

42993. "*Mango Liso*. Large, one of the earliest, ripe March to April. Good flavor."

42994. "*Mango Chupa*. Large red."

42995. "*Mango Masa*. Yellow with dark lines."

42996. "*Mango Lechoso*. Commonest and best flavored of mangos in this region. Very large crop this year. Fruit medium sized, yellow, very much fiber."

42997. *CITRUS* sp. Rutaceæ. Orange.

"Seeds of a large orange; fair flavor, sweet. (Margarita, Mompos, Colombia, May 15, 1916.)"

42998. *ANNONA MARCGRAVII* Mart. Annonaceæ. Guayabana.

"Wild form of this plant in the second-growth forests along the Magdalena River, possibly escaped from cultivation, as most of this region has been cleared during the last 300 years, and grows up into

42986 to 43010—Continued.

the forests. Fruits are 4 or 6 inches in diameter, heart shaped, and a greenish white color; not of unpleasant flavor, but rather dry as compared with the ordinary cultivated forms."

For previous introduction, see S. P. I. No. 42988.

42999. *BACTRIS* sp. Phœnicaceæ.

Palm.

"From Tierras de Loba, Bolivar, Colombia."

43000. *CHRYSOBALANUS ICACO* L. Rosaceæ.

Iceco.

"A shrub from 4 to 8 feet in height, much branched. Planted more as an ornamental about the houses than for fruit. Fruits white with a pinkish bloom, rather dry and insipid; about the size of a wild plum."

For previous introduction, see S. P. I. No. 33791.

43001. *ELAEIS MELANOCOCCA* Gaertn. Phœnicaceæ.

Palm.

"*Palma corozo*. Palm with practically no stems, leaves borne from within 2 to 3 feet from the ground, 8 to 10 feet long. Fruits borne in dense heads, a great part of them included among the bases of the leaves. Fruits compressed and irregular, orange-red in color when ripe. Two classes of oil are obtained, red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the lowlands among the flooded areas. This palm is often found growing under conditions similar to those of our flooded bottom lands along the Mississippi or the Gulf coast rivers."

For previous introduction, see S. P. I. No. 40303.

43002. *CEREUS* sp. Cactaceæ.

Cactus.

"The plants reach a size of from 12 to 20 feet high. Fruits edible, about the size of an egg, red, and of a pleasant flavor. Common plant of the hills above the Bay Santa Marta."

43003 to 43006. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

"Growing together on a small plantation. Strong healthy plants full of flowers and fruits at the time of collection, June, 1915."

43003. "*Peruvian* cotton."

43005. "*Antioquia* cotton."

43004. "*Bogota* cotton."

43006. (Colombian.)

43007. *MOMORDICA ZEYLANICA* Mill. Cucurbitaceæ.

Balsam-apple.

"The Chinese gardeners about the American cities grow this plant under the name of la-kwa, for the edible pulpy arils surrounding the seeds, also for the edible fruit itself (which is prepared, usually by boiling, before it is ripe). The rind is sometimes dried and used in medicinal preparations. The odd seeds cause it to be called the 'art pumpkin' by some persons." (*Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 2060.*)

For previous introduction, see S. P. I. No. 28284.

43008. *SALIX CHILENSIS* Molina. Salicaceæ.

Willow.

(*S. humboldtiana* Willd.)

"Common willow from the Magdalena River region; size about 20 feet in height, 5 to 6 inches in diameter. It has no commercial use, but it will probably be useful for basket work. It is probably *Salix humboldtiana*."

For previous introduction, see S. P. I. No. 28709.

42986 to 43010—Continued.

43009. *SAPINDUS SAPONARIA* L. Sapindaceæ.

Soapberry.

"Common tree of the Magdalena River region; size 50 to 60 feet, and the diameter is 18 to 24 inches. Fruits are not commonly used in this region. An ornamental and useful timber tree."

For previous introduction, see S. P. I. No. 42728.

43010. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

(*S. indicum* L.)

"*Honholi*. A low annual herb from 2 to 3 feet in height. Seeds used for making sweetmeats. Commonly cultivated in low negro clearings."

For previous introduction, see S. P. I. No. 36896.

43011. *OSTERDAMIA MATRELLA* (L.) Kuntze. Poaceæ.

Grass.

(*Zoysia pungens* Willd.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Company. Received May 10, 1916.

A creeping grass, important in binding coast sands, which does well on alkali soils and also as a lawn grass. Said to be relished by stock.

See S. P. I. No. 34657 for previous introduction.

43012. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

From Cochabamba, Bolivia. Presented by Mr. Johnson Turnbull. Received June 27, 1916.

"These stones are remarkably small for peach stones, some of them being only half an inch long and one-fourth of an inch thick, while the largest does not exceed three-fourths of an inch in length. The surface is rather smooth, the inequalities consisting mostly of pits instead of grooves, and they are sharp pointed at the apex. The fruit is evidently a cling, and from the amount of flesh adhering, there was evidently a fair proportion of flesh to the size of the stones. Cochabamba is about latitude 17° 20' S., and the altitude is about 8,000 feet." (*W. F. Wight*.)

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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1917.

(No. 50; Nos 43980 to 44445.)



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BUREAU OF PLANT INDUSTRY.

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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge.*

P. H. Dorsett, *Plant Introducer, in Charge of Introduction Gardens.*

B. T. Galloway, *Plant Pathologist, Special Research Projects.*

Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service.*

Wilson Popenoe and J. F. Rock, *Agricultural Explorers.*

R. A. Young, *Plant Introducer, in Charge of Dasheen and Tropical Yam Investigations.*

H. C. Skeels, *Botanist, in Charge of Collections.*

G. P. Van Eseltine, *Assistant Botanist, in Charge of Publications.*

L. G. Hoover, *Assistant Plant Introducer, in Charge of Chayote Investigations.*

C. C. Thomas, *Assistant Plant Introducer, in Charge of Jujube Investigations.*

E. L. Crandall, *Assistant in Charge of Photographic Laboratory.*

P. G. Russell and Patty Newbold, *Scientific Assistants.*

David A. Bisset, *Superintendent, Bell Plant Introduction Garden, Glenn Dale, Md.*

Edward Goucher, *Plant Propagator.*

J. E. Morrow, *Superintendent, Plant Introduction Garden, Chico, Calif.*

Henry Klopfer, *Plant Propagator.*

Edward Simmonds, *Superintendent, Plant Introduction Garden, Miami, Fla.*

Charles H. Steffani, *Plant Propagator.*

Henry E. Juenemann, *Superintendent, Plant Introduction Garden, Bellingham, Wash.*

Wilbur A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*

E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*

Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartless,

Scharunpur, India; E. W. D. Holway, *Faribault, Minn.*; Barbour Lathrop, *Chicago, Ill.*;

H. L. Lyon, *Honolulu, Hawaii*; Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Little-*

river, Fla.; Dr. L. Trabut, *Director, Service Botanique, Algiers, Algeria*; Dr. William

Trelease, *Urbana, Ill.*; E. H. Wilson, *Arnold Arboretum, Jamaica Plain, Mass.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JANU- ARY 1 TO MARCH 31, 1917 (NO. 50; NOS. 43980 TO 44445).

INTRODUCTORY STATEMENT.

When the war broke out it was expected by many that interest in new plants would suffer a serious setback. That the contrary is true is the conviction forced upon the writer from watching the correspondence which passes over his desk. The hunt for substitutes has served to counterbalance in a measure the effect of the curtailment of the funds of amateur and official experimenters, and the spectacle of our dependence upon foreign raw plant materials has been in the nature of a revelation to millions of people. That the world has scattered over it enthusiastic pioneers who see possibilities in plants which are now obscure, this inventory is evidence, for it describes plants sent in by such pioneers during the third year of the war from 41 different foreign countries or separate islands. While the total number for the three months covered is not so great as that during the similar period in 1913, the fact must be taken into account that only two explorers of the office were in the field, viz. Frank N. Meyer, in central China, and Wilson Popenoe, in Guatemala.

Hosts of the plants have been sent in by correspondents, many of them foreigners, who recognize, as we do, that the area of plant culture can not be confined by national boundaries, but is limited only by the natural barriers of soil, climate, and human intelligence. In the world to-day there is no large plant monopoly which depends for its maintenance upon the prohibition of the export of the seeds of the plant on which it is founded. Where the plants can grow to perfection and the requisite human intelligence is present and other economic factors are favorable, there plant industries will be built up and maintained so long as the factors of quality and the cost of production and transportation remain favorable and fashion does not change.

Many of the plants herein recorded are in the nature of gifts to America by foreign countries, and it is with especial pleasure that we acknowledge officially the debt of gratitude, realizing fully that,

many years hence, when the plants shall have developed and become widely grown, this debt may indeed be a very large one.

The more promising of the introductions appear to be the following:

Three selected strains of red clover (*Trifolium pratense*, Nos. 44105 to 44107), presented by the Danish Royal Agricultural Society, two being quite new, the third already in general use in Denmark.

Psychotria bacteriophila (No. 44119), a shrub from the Comoro Islands, Madagascar, producing leaves which harbor nodules of bacteria that gather nitrogen from the air, quite as do the root nodules of the Leguminosæ.

An ash (*Fraxinus potamophila*, Nos. 44132 to 44134), from Chinese Turkestan, sent through the American ambassador by the British consul general at Kashgar. This ash, first introduced by Frank N. Meyer, has proved perfectly hardy at Fallon, Nev., and promises to be a valuable tree on the poor soil of that region.

The famous Pai li and other cultivated large-fruited varieties of the blight-resistant pear (*Pyrus ussuriensis*, Nos. 44145, 44147, 44148, 44150, and 44151) from China, obtained through Mr. Meyer.

A tall-growing, new species of spruce (*Picea meyeri*, No. 44149), found by Mr. Meyer in Shinglungshan, Chihli Province, China, and named by Rehder and Wilson after our explorer.

A collection of cultivated varieties of Chinese pears (Nos. 44163 to 44174 and 44176), containing some of *Pyrus ussuriensis* and others of *P. lindleyi*. These may prove of considerable value in the studies of blight resistance which are now being made by Reimer and others.

An amaranth (*Amaranthus paniculatus*, No. 44178) from Kashmir, where its farinaceous seeds form the staple food of the hill tribes in many parts of India: the plant is known as rájgira.

A species of Calamus (No. 44181), called the litoco, introduced by Mr. Wester, from Kiangnan, northern Luzon. This plant bears small, scaly fruits, of subacid, refreshing flavor, resembling the lanzon (*Lansium*), and with excellent keeping qualities.

Garcinia multiflora (No. 44239), from Kiayingehow, near Swatow, China, a shrub which bears a delicious but small fruit resembling the true mangosteen in flavor. The fact that it has withstood temperatures of 27° F. without injury may indicate that it can be grown outside the Tropics, and its relation to the true mangosteen may make it valuable for breeding purposes.

Seeds of *Bambos tulda* (No. 44240), from Dehra Dun, India. This species has proved so easy of cultivation in Panama and Porto Rico and its timber is so valuable for fishing-rod manufacture that the securing of a considerable quantity of seed is worthy of mention.

Cudrania tricuspidata (No. 44241), from American-grown trees at Augusta, Ga., where the tree seems to be quite at home and bears

heavily. Recent information indicates that the silk from silkworms fed upon the leaves of this plant is different from ordinary silk and that lute strings made from it give a clearer tone than those made of silk spun by silkworms fed on the ordinary mulberry leaves. This fact doubtless will be of interest to all those studying the influence of foods upon the secretions of animal bodies. Silk being a typical protein, like the white of eggs or the casein of milk, facts discovered regarding changes in its character might have a bearing upon the studies of the changes in the character of other proteins.

A wild bush tomato (*Lycopersicon esculentum*, No. 44245), with wrinkled fruits, from Panama, where it appears, according to Mr. O. W. Barrett, to be resistant to wilt (*Bacillus solanacearum*).

A collection of Chinese peach varieties (*Amygdalus* spp., Nos. 44253 to 44266) from Kiangsu Province, China, secured through the Rev. Lacy L. Little, of Kiangyin, among them one variety from the famous Lushang Gardens.

In Nairobi, British East Africa, the inner bark of *Strychnos spinosa* (No. 44019) appears to be used successfully as an antidote for snake bites and deserves to be investigated. The fact that this plant grows so successfully in southern Florida, where rattlesnakes and moccasins are frequent, may make the wide distribution which has been made of it a thing well worth while. In any event, it deserves study from this new point of view.

The pepino (*Solanum muricatum*, Nos. 44021 and 44022) appears to be represented in Ecuador by two distinct varieties, one white and the other purple. As this is a fruit of excellent quality, practically seedless, and adapted for salads, it seems a pity that a more thorough test of it has not been made in America. Enough ought to be produced to place it on our markets for several years, for a fruit which has become so popular in the Canary Islands surely has a chance in America.

A new annual legume (*Aeschynomene* sp., No. 44040), for soil fertilization, from Costa Rica, which, though not certainly a forage crop, is reported to have unusual quantities of nitrogen-collecting nodules on its roots.

Sixteen distinct species or hybrids of the genus *Pyrus* (Nos. 44041 to 44056), from the Arnold Arboretum. These deserve a thorough trial as stocks for the cultivated pear. This is particularly interesting at this time, when the question of shutting out European-grown nursery stock and the creation of a more uniform root system for our orchard trees appear as problems of great importance.

Few shrubs strike the American visitor to England as adding more to the charm of the grounds of small cottages than do the cotoneasters, which are extensively used in dooryards. Many of those used in England are tender here, but certain of the Chinese

species (see Nos. 43989 to 43995 and 44077 to 44084) are quite hardy with us, and these deserve the same place in our gardening that the more tender species occupy in England.

It is not often that a plant is introduced from a region so little known as the Falkland Islands, and the climate of these islands of the southern hemisphere may be difficult to approximate in America, but the tussock grass (*Poa flabellata*, No. 44000), which grows in peaty soils near the sea, yields a good forage, and has edible nutty flavored shoots, should be tested carefully.

The tree-tomato (*Cyphomandra betacea*, No. 44064) appears to have become a cultivated fruit plant in British East Africa, and a purple-fruited strain of it found there indicates that something may be done in the selection of this promising species of Solanaceæ.

The species of Rollinia (No. 44094), as yet undescribed, collected by Mr. M. T. Dawe, in the lowlands of northern Colombia, is said to bear orange-colored edible fruits. This adds another annonaceous fruit to the collection being assembled for purposes of hybridization and selection at Miami, Fla.

The pacaya palm (*Chamaedorea* sp., No. 44059), cultivated in nearly every garden in Coban, Guatemala, and producing edible inflorescences like ears of corn, deserves to be studied, and if it can be grown in southern Florida or California it should be planted in sufficient quantities to test it thoroughly as a salad-producing plant.

A native grape (*Vitis tiliacifolia*, No. 44060), sold in the city markets of Guatemala, is used extensively for jelly making. It grows luxuriantly in southern Florida and may prove a stock for North American or European grapes.

The soft lumbang tree (*Alcurites trisperma*, No. 44061), producing an oil similar to that of the Chinese tung-oil tree, deserves study on a plantation scale to determine whether it can be grown economically in our tropical territory and can be depended upon to increase the supply of this valuable drying oil, which has trebled in price since the war.

A remarkable collection of pear species and varieties (Nos. 44274 to 44280) made by Mr. Meyer in Chihli Province, China, and including a cultivated variety of *Pyrus ussuriensis* with edible fruits and another pear, possibly a new species, is used for stock by the Chinese horticulturists.

Mangifera caesia (No. 44290), a species related to the mango, may be worthy of trial as a stock, or possibly crosses of it might be useful.

Four varieties of seedling avocados (*Persea americana*, Nos. 44439, 44440, 44444, and 44445) from Guatemala, collected by Wilson Popenoe, include one producing fruits of very unusual size (45

ounces) and good quality, which is at the same time a productive sort.

The manuscript of this inventory has been prepared by Mrs. Ethel M. Kelley, the botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels, and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office.

DAVID FAIRCHILD,

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,

Washington, D. C., October 14, 1919.

INVENTORY.¹

43980. *BERBERIS TRIFOLIOLATA* Moric. Berberidaceæ. **Barberry.**

From College Station, Tex. Presented by Mr. B. Youngblood, director, Agricultural Experiment Station. Received January 8, 1917.

An evergreen shrub from western Texas, with leaves composed of three to five spiny leaflets, which produces red, aromatic, acid berries, about the size of peas. These berries ripen in May. They are often called "currants," and are used for tarts, jellies, etc. (Adapted from *Coulter, Contributions from the United States National Herbarium*, vol. 2, p. 10.)

"According to Mr. Youngblood's verbal statement, this barberry jelly is being made each year in increasing quantities and is highly prized by all who have tested it. There would appear to be a field for the plant breeder in the development of heavy-fruited barberries of good flavor with few or no seeds, and it seems remarkable that no one has undertaken the task." (*Fairchild.*)

43981. *DAHLIA* sp. Asteraceæ. **Tree dahlia.**

From Tactic, Alta Vera Paz, Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 10, 1917.

"No. 78. Double white variety. The pink tree dahlia is common throughout a large part of Guatemala. I have seen it from Antigua to Coban, often in great abundance, its huge single pink flowers, 4 inches in diameter, making it a very striking thing. The pink form, which apparently is the typical one, is the only form which I have seen in the southern part of Guatemala, but in the vicinity of Tactic there are three other forms. None of these is so common as the pink form, although all are seen occasionally in gardens. The forms in question are a single white, identical with the typical single pink except in its color, which is pure white; a double pink, of the same lilac-pink shade as the typical form, but with double flowers 3 inches in diameter; and a double white form, of the same character as the double pink, but pure white. The tree dahlia is called *shikar* in the Pokomchi dialect, the language of the Indians at Tactic. It is very commonly planted around gardens and dooryards to form a hedge, large cuttings 3 to 4 feet long and of stems 1 to 2 inches in diameter being inserted in the ground and apparently rooting very readily. The plants grow to 15 feet in height, and when in full bloom, as they are at this season of the

¹ Each introduction consists of seeds unless otherwise specified.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the designations appearing will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

year, are a glorious sight. Tactic is made beautiful by this common plant, and it would seem well worth while to test it for hedges in California, where the pink form has already been introduced and is offered in the trade. The variety sent in under this number is the *double white*, which seems to be one of the most beautiful of all. The flowers of this form are extensively used by the Indians of Tactic for decorating the images of saints which they have in their houses and in the churches." (*Popenoe*.)

This is possibly a cultivated form of *Dahlia maxoni* Safford.

43982. Gossypium sp. Malvaceæ.

Cotton.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead. Received January 10, 1917.

"Seeds of the native red cotton of Paraguay. This is said to be indigenous." (*Mead*.)

43983 and 43984. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.)

Chayote.

From Rio de Janeiro, Brazil. Presented by Dr. Alberto Löfgren, Botanic Garden. Received January 2, 1917.

43983. "Fruit very small and quite corrugated." (*B. T. Galloway*.)

43984. "Fruit medium sized, considerably corrugated, and spineless; skin thick" (*B. T. Galloway*.)

43985. CASTILLEJA INDIVISA Engelm. Scrophulariaceæ.

Painted cup.

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected at Lyford, Tex., by Dr. David Griffiths, of the Department of Agriculture, May 2, 1915. Plants numbered for convenience in distribution on January 17, 1917.

"One of the most showy of the winter annuals of southern Texas. The seedlings come up very abundantly upon the sandy coastal plain in autumn, developing slowly during the winter but rapidly in early spring, and dominating the color of acres of the landscape in late March and early April. Here its seeds are matured in late April and early May. There are few native plants more showy than this one. This whole group of *painted cups*, however, is considered somewhat difficult to grow and is consequently little handled in the trade in this country, although commonly grown in England. Our efforts have met with both success and failure in their handling. Recent trials indicate that the habits of the plant fit it to stand winter handling and that it can be grown successfully as a winter annual in regions having mild winters with sufficient moisture for seed germination in autumn. It requires a comparatively low temperature for its development. Experience at Chico, Calif., shows that the sudden transition from winter to summer, such as we have, dwarfs the plants before maturity, so that they produce but few of the colored bracts which are so attractive in all of the *painted cups* or *Indian paintbrushes*." (*Griffiths*.)

43986. CARICA PAPAYA L. Papayaceæ.

Papaya.

From St. Leo, Fla. Presented by Father Jerome, St. Leo College. Received January 2, 1917.

"Seed saved from a tree that has endured a temperature of 27° F. and has borne 100 fruits in 12 months from seed. Father Jerome received from Hawaii the seed from which this tree was grown." (*Peter Bisset*.)

43987. PYRUS CALLERYANA Decaisne. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Scions presented by the Arnold Arboretum.
Received January 2, 1917.

This wild Chinese pear is not uncommon in western Hupeh at altitudes of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions, and might prove to be a very desirable blight-resistant stock. The woolly aphid, which attacks other species of pears, has not been known to touch this species. (Adapted from *Compere, Monthly Bulletin Calif. State Comm. Hort.*, vol. 4, pp. 313-314, and from *Rehder, Chinese Species of Pyrus, Proc. Am. Acad.*, vol. 50, pp. 237-238.)

43988. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. **Plum.**

From Seharunpur, India. Cuttings presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received January 4, 1917.

"*Alucha black.*" A plum from Chinese Turkestan, with medium-sized cling-stone fruits of fine flavor, which ripen late in July. They are excellent for preserves and jellies. (Adapted from *note of Frank N. Meyer, Jan. 10, 1911.*)

See also S. P. I. No. 40223 for further data.

43989 to 43996.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 5, 1917.

43989. COTONEASTER AMBIGUA Pehd. and Wils. Malaceæ.

A shrub from western China, up to 7 feet high, with deciduous, oval-oblong, sharp-pointed leaves up to 2 inches long; five to ten pinkish flowers borne in corymbs; and black globose fruit about one-third of an inch long containing two or three, rarely four or five, stones. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 160-161.)

43990. COTONEASTER DIELSIANA E. Pritz. Malaceæ.

A shrub from western China, up to 6 feet high, with slender spreading and arching branches and deciduous, firm oval leaves about three-quarters of an inch long with yellowish gray lower surfaces. The pinkish flowers are few and short stemmed, and the red fruit, a quarter of an inch in diameter, contains three or four stones. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 866.)

43991. COTONEASTER DIVARICATA Rehd. and Wils. Malaceæ.

A deciduous upright shrub from central and western China, with shining oval leaves, one-third to three-quarters of an inch long. The pink flowers are usually in threes, and the fruit, which contains only two stones, is one-third of an inch long. It is a very handsome shrub when studded with its bright-red fruits and is hardy at the Arnold Arboretum. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 3, p. 865.)

43992. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

A low Chinese shrub of prostrate habit, with almost horizontal branches in two dense series and roundish oval leaves less than one-third of an inch long. The flowers are erect, pink, and either solitary or in pairs;

43989 to 43996—Continued.

and the bright-red oval fruit, a quarter of an inch in diameter, usually contains three stones. One of the most effective fruiting shrubs for rockeries. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 865.)

43993. *COTONEASTER NITENS* Rehd. and Wils. Malaceæ.

A shrub from western China, up to 4½ feet high, with deciduous, oval, obtuse, shining green leaves up to half an inch or more long; probably pink flowers, and nearly black fruits, either solitary or in pairs, up to one-sixteenth of an inch long, and containing two stones. In its native country it grows at elevations of 7,500 to 10,000 feet. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 156-157.)

43994. *COTONEASTER OBSCURA* Rehd. and Wils. Malaceæ.

A shrub from western China, up to 10 feet in height, with elliptic-oval leaves, 1 to 2 inches long. The fruit is dull red, one-third of an inch long, and generally contains three stones. The flowers are white. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 867.)

43995. *COTONEASTER TENUIPES* Rehd. and Wils. Malaceæ.

A gracefully branched deciduous shrub from western China, up to 7 feet tall, with oval or elliptic-oval sharp-pointed leaves about 1½ inches long. The flowers are white; the fruits are nearly black, usually solitary, and contain two stones. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 171.)

43996. *SORBUS POHUASHANENSIS* (Hance) Hedl. Malaceæ.

An evergreen shrub from northern China, with reddish brown twigs, leaves composed of six to seven pairs of elliptic or lance-elliptic leaflets from 1½ to 2 inches long, and red fruits about one-third of an inch in diameter. This shrub is in cultivation at the Arnold Arboretum. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 672.)

43997 and 43998.

From Caracas, Venezuela. Collected by Dr. J. N. Rose, associate curator, United States National Museum. Received January 5, 1917.

43997. *FRAGARIA VESCA* L. Rosaceæ.

Strawberry.

Fruits are found wild in the mountains, but Dr. Ernst declares "not native." (Rose.)

43998. *GUAVA* L. Myrtaceæ.

Guava.

"Guava, the largest I have ever seen. It is 4 inches long, somewhat a large Bartlett pear. It may be new to me. It is called at Caracas the 'Peruvian Guava' and was obtained in Peru in 1914. It has only recently been obtained from Mr. Frederick ... Caracas & La Guaira Railroad."

43999. BAILEYA MULTIRADIATA Harv. and Gray. Asteraceæ.

From the Santa Rita Mountains, Ariz. Collected by Dr. David Griffiths.
Received January 6, 1917.

A very handsome plant, found in the southwestern United States and northern Mexico. It is biennial or perennial, densely woolly, with alternate compound leaves and long-stemmed heads of bright-yellow flowers. It is common on the mesas in the early spring, and sometimes continues flowering until late in the fall. (Adapted from *Wootton and Standley, Flora of New Mexico*, p. 718.)

44000. POA FLABELLATA (Lam.) Hook. f. Poaceæ. **Tussock grass.**

From Stanley, Falkland Islands. Procured from Mr. W. A. Harding, manager, Falkland Islands Co., through Mr. David J. D. Myers, American consul, Punta Arenas, Chile. Received January 8, 1917.

A coarse grass, native of the Falkland Islands, growing on peat soils near the sea. The plant forms dense masses of stems which frequently rise to a height of 4 to 6 feet, and the long, tapering leaves 5 to 8 feet long and an inch wide at the base hang gracefully over in curves. The plant is much relished by cattle; it is very nutritious and contains saccharin. The inner portion of the stem, a little way above the root, is soft and crisp, and flavored like a hazelnut; the inhabitants of the Falkland Islands are very fond of it. They boil the young shoots and eat them like asparagus. (Adapted from *Hogg, Vegetable Kingdom*, pp. 823-824.)

See S. P. I. No. 43564 for previous introduction.

44001 to 44005.

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Received January 9, 1917.

44001. CARDIOSPERMUM HIRSUTUM Willd. Sapindaceæ.

Seeds of a creeping or ascending perennial vine, cultivated in southern California, with a densely hairy, grooved stem, deeply dentate leaves with hairy lower surface, small white flowers in axillary racemes, and pointed, hairy fruits, each containing a globular chocolate-brown seed. This plant is useful for covering arbors; it blooms continuously. It came originally from Africa. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 661.)

44002. DIPLACUS LONGIFLORUS Nutt. Scrophulariaceæ.

Plants of a low subshrubby perennial from California. The opposite, broadly lanceolate leaves are dark green above, and the large flowers, 1½ inches across, are a beautiful pale orange or buff. The showiness and the rare color of the flowers make this plant a most attractive ornamental.

44003. PENTSTEMON CORDIFOLIUS Benth. Scrophulariaceæ.

Beard-tongue.

Plants of a more or less shrubby climber, with long very leafy branches and short leafy clusters of rich scarlet flowers nearly 2 inches long. The brilliant flowers form a striking contrast to the dark-green foliage.

44001 to 44005—Continued.**44004. RIBES SPECIOSUM** Pursh. Grossulariaceæ.**Gooseberry.**

Plants of an evergreen California shrub, 3 to 5 feet high, with shining dark-green 3-lobed leaves and drooping clusters of bright-red flowers. In March and early April it forms one of the conspicuous charms of the foothills about Los Angeles.

44005. ZAUSCHNERIA CALIFORNICA Presl. Onagraceæ.**Balsamea.**

Cuttings of a low perennial herb, found at medium altitudes of the Sierra Nevada mountain range in California, with erect or decumbent stems about a foot high and oblong or narrow alternate leaves. The large scarlet fuchsialike flowers are up to 2 inches long, and the oblong seeds have tufts of hair at the apexes. Among the Spanish element in California this plant is used as a vulnerary. (Adapted from *Jepson, Flora of Western Middle California*, p. 327.)

44006. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

From Hongkong, China. Presented by Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received January 13, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44007 to 44017. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Santiago de las Vegas, Cuba. Cuttings presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received January 15, 1917.

44007. B-604.**44013. D-306.****44008. B-1753.****44014. Blanca.****44009. B-6308.****44015. Lucier.****44010. B-6450.****44016. Caledonia.****44011. B-6204.****44017. B-3412.****44012. D-74.****44018. AMYGDALUS PERSICA** L. Amygdalaceæ.**Peach.**

(*Prunus persica* Stokes.)

From Tientsin, China. Presented by Mr. Fred. D. Fisher, American consul general. Received January 15, 1917.

"Seeds of common peaches; early season, grown on the banks of the Hai Ho, Tientsin, China." (*Fisher.*)

44019. STRYCHNOS SPINOSA Lam. Loganiaceæ.**Kafir orange.**

From Nairobi, British East Africa. Presented by Mr. A. C. MacDonald, Director of Agriculture, through Mr. Ralph M. Odell, commercial agent, Bombay, India. Received January 16, 1917.

"A moderate-sized tree of the family Loganiaceæ, which produces fruit very similar to an orange. The shell is hard and contains numerous (upwards of 40) seeds of a flat and somewhat circular outline half an inch or more in diameter. When quite ripe the fruit is juicy, and it is eaten and much liked by the natives. The tree is fairly common at Mazeras and Samburu and is probably distributed in other districts in the surrounding country." (*H. Powell.*)



THE GUATEMALAN PEPINO, A SEEDLESS SALAD FRUIT (*SOLANUM MURICATUM*, S. P. I. No. 44021).

Though introduced into California from Guatemala 20 years ago, this relative of the tomato has not become popular, as it has in the Canary Islands. It is doubtful whether it has found its proper niche there, where it can produce as delicate-flavored fruits as it does in the terraced gardens of Grand Canary. Its seedlessness, juiciness, and cucumberlike flavor make it worth serious consideration as an addition to salads. (Photographed by David Fairchild, Grand Canary, near Las Palma, Canary Islands, April, 1903; P9790FS.)



BARGAINING FOR KAU BA IN SHANGHAI (*ZIZANIA LATIFOLIA*, S. P. I. No. 44069).

Scene in the Hongkew market. A Japanese girl is bargaining for "water-bamboo" shoots, "kau ba," as they are called locally. These shoots supply a tasteful vegetable when properly prepared. The young shoots of this relative of our own American wild rice are eaten in the late spring when they are swollen by the action of a fungus similar in its effect to corn smut. It is in no way related to the true bamboo. The usual name for this wild rice is ku, and the South China name for the shoots is chiao sun. (Photographed by Frank N. Meyer, June 11, 1915, at Shanghai, China; P12301FS.)

44020. PYRUS sp. Malaceæ.**Pear.**

From Ningpo, Chekiang, China. Cuttings presented by Mr. L. C. Hylbert.

Received January 15, 1917.

44021 and 44022. SOLANUM MURICATUM Ait. Solanaceæ.**Pepino.**

From Ecuador. Presented by Mr. Frederick W. Goding, American consul general, Guayaquil. Received January 17, 1917.

"After persistent search a place near Huigra was found where the plants grew at an altitude of 6 000 feet. As a point of interest I will state that these two varieties are now growing in boxes at this office. One of them has produced flowers, but no fruit as yet." (Goding.)

44021. "Purple pepino."**44022. "White pepino."**

For an illustration of the Guatemalan pepino, see Plate I.

44023 to 44028. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Cienfuegos, Cuba. Cuttings presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

"Cuttings. High in sugar, averaging from 19 to 20 per cent sucrose in our hand-mill analyses." (Grey.)

44023. [No label.]**44026. Harvard 6047.****44024. Harvard 4068.****44027. Harvard 6065.****44025. Harvard 5082.****44028. Harvard 6159.****44029 to 44035. SACCHARUM OFFICINARUM L. Poaceæ.****Sugar cane.**

From Cienfuegos, Cuba. Seeds presented by Mr. R. M. Grey, Harvard Experiment Station. Received January 18, 1917.

44029. Harvard 5150.**44033. Harvard 1309.****44030. Harvard 1421.****44034. Harvard 5039.****44031. Harvard 2048.****44035. Harvard 1193.****44032. Harvard 5005.****44036. CARICA PAPAYA L. Papayaceæ.****Papaya.**

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor, American Samoa. Received January 22, 1917.

"A variety of papaya known here as 'Esi fafine.'" (Poyer.)

44037 to 44039.

From Changning, v'a Swatow, China. Presented by Rev. C. E. Bousfield, American Baptist Mission. Received January 23, 1917.

44037. CHAETOCHLOA ITALICA (L.) Scribn. Poaceæ. Common millet.
(*Setaria italica* Beauv.)

Millet is cultivated extensively as a food plant in Asia, though it is raised only for fodder in America.

44037 to 44039—Continued.

44038. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. **African millet.**

A grass closely related to and much resembling goose-grass (*Eleusine indica*), often cultivated as an ornamental.

44039. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

Apparently a nonsaccharine or forage variety.

44040. AESCHYNOMENE sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 17, 1917.

"*Yellow sensitiva*. A very dense-growing leguminous annual, whose roots are almost completely covered with nodules. People say that it is a good forage plant, but I have never seen cattle eat it. Our best plant for nitrification of the soil." (Wercklé.)

44041 to 44056. PYRUS spp. Malaceæ. **Pear.**

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 25, 1917.

44041. PYRUS AMYGDALIFORMIS Vill.

A small tree, native of southern Europe, occasionally 20 feet or more high, or sometimes merely a large, rounded shrub. The leaves, which are variable in shape and size, are from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length; the white flowers, 1 inch wide, are produced in April in corymbs; and the round, yellowish brown fruits are about an inch in diameter. The chief merit of this tree is its picturesqueness in age. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273.)

44042. PYRUS BETULAEFOLIA Bunge.

A slender, fast-growing, graceful tree from northern China, attaining a height of 20 to 30 feet, with the young shoots thickly covered with a persistent gray felt. The dark-green oval or roundish, dentate, long-pointed leaves are 2 to 3 inches long; the white flowers, three-quarters of an inch wide, occur eight to ten in corymbs; and the grayish brown, roundish fruits are about the size of a pea. The Chinese use this as a stock on which to graft fruiting pears. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 279.)

44043. PYRUS BRETSCHNEIDERI Rehder.

A medium-sized Chinese tree, with sharp-pointed serrate leaves 2 to 4 inches long, white flowers about three-quarters of an inch wide occurring seven to ten in racemes, and nearly globular yellow fruits up to $1\frac{1}{2}$ inches long. It is possible that the native name *Pai-li* may include this species. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, p. 231.)

44044. PYRUS CALLERYANA Decaisne.

See S. P. I. No. 43987 for previous introduction and description.

44045. PYRUS PHAEOCARPA GLOBOSA Rehder.

A medium-sized Chinese tree with ovate, round-based, deep-green leaves; unusually large, white flowers; and globular brown or russet slender-stalked fruits. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2780.)

44041 to 44056—Continued.**44046. PYRUS HETEROPHYLLA** Regel and Schmalh.

A small tree, ultimately 20 to 30 feet high, native of Eastern Turkestan, with exceedingly variable leaves of two extreme types, either oval and 2 to 3½ inches long, or cut back to the midrib into three to seven narrow lobes, which are three-quarters of an inch to 2 inches long. The white flowers, three-quarters to an inch wide, are produced in small clusters, and the fruit is like an ordinary small pear. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 284-285.)

44047. PYRUS KORSHINSKYI Litv.

A tree native of Bokhara, Turkestan, 20 feet or more in height, or sometimes a shrub, with coriaceous lance-shaped or ovate-oblong, coarsely crenate leaves about 3 inches long, and nearly globose stout-stalked fruits almost an inch in diameter, crowned by a persistent calyx. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2868.)

44048. × PYRUS MALIFOLIA Spach.

A hybrid of unknown parentage, originally grown in Paris in 1834, where it formed a tree more than 30 feet high with a rounded bushy head. The leaves are oval or roundish, about 3 inches wide, occurring in few-flowered corymbs. The deep-yellow fruit is turbinate and about 2 inches long and wide. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 286-287.)

44049. × PYRUS MICHAUXII Bosc.

A small tree, probably native of the Levant, and said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*. It has entire oval or oval-oblong, shining leaves up to 3 inches long, white flowers in very short corymbs, and globular or turbinate greenish yellow fruits. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 288.)

44050. × PYRUS OBLONGIFOLIA Spach.

A small tree, occasionally 20 feet or more high, said to be a hybrid between *Pyrus amygdaliformis* and *P. nivalis*, and common in Provence, France. The leaves are oval or oblong, and the fruits, which are yellowish, tinged with red on the sunny side, are about 1½ inches in diameter. In Provence it is known as the *Gros Perrussier*. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 273, under *P. amygdaliformis oblongifolia*.)

44051. PYRUS USSURIENSIS OVOIDEA Rehder.

A Chinese tree of pyramidal habit, 30 to 50 feet high, with oval-oblong sharply serrate leaves, 3 to 5 inches long; white flowers in five to seven flowered racemes; yellow, juicy, somewhat astringent, exactly egg-shaped fruits, up to 1¾ inches long. In autumn the foliage turns a bright scarlet, and the flowers appear a week ahead of the other species of pears. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, pp. 228-229, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2869.)

44052. PYRUS PASHIA Buch.-Ham.

A usually spiny tree from western China and the Himalayas, with leaves when young three lobed and doubly serrate, becoming glabrous with age. The flowers, an inch wide, are mostly in woolly corymbose

44041 to 44056—Continued.

clusters, and the brown fruits are globose and an inch in diameter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2870.)

Received as *Pyrus variolosa*, which is generally referred to *P. pashia*.

44053. PYRUS SALICIFOLIA Pall.

Var. *pendula* Hort. A very elegant tree, native of southeastern Europe and Asia Minor, from 15 to 25 feet high, with pendulous branches, narrow lance-shaped shiny green leaves $1\frac{1}{2}$ to $3\frac{1}{2}$ inches long, pure-white flowers three-quarters of an inch wide in small dense corymbs, and pear-shaped fruits 1 to $1\frac{1}{4}$ inches long. The leaves and flowers of this very ornamental pear often open simultaneously, producing a charming effect. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 292-293.)

44054. PYRUS SEROTINA Rehder.

A tree native of central and western China, 20 to 30 feet high, with oval-oblong sharply serrate leaves 3 to 5 inches long, six to nine white flowers in each raceme, and nearly globular, brown fruits with slender stalks. This species or one of its forms has been recommended on the Pacific coast as a more or less blight-resistant stock for the European types. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, pp. 2868-2869.)

44055. PYRUS SERRULATA Rehder.

A tree native of western China, 22 to 25 feet high, with oval or oval-oblong serrulate leaves up to $4\frac{1}{2}$ inches long, six to ten white flowers in each umbellate raceme, and nearly globular brown fruits about three-fifths of an inch long. (Adapted from *Rehder, Proceedings of the American Academy of Arts and Sciences*, vol. 50, pp. 234-235.)

44056. PYRUS USSURIENSIS Maxim.

A tree native of Amur and Ussuri, Siberia, from 20 to 30 feet high, with broadly oval, sharply serrate, acuminate leaves, many-flowered racemes of white flowers, and roundish oval, umbilicate, mild-flavored fruits over an inch in diameter, crowned by a persistent calyx. In autumn the foliage turns a shining brownish red, making the tree very ornamental. (Adapted from *E. Regel, in Gartenflora*, vol. 10, pp. 374-375.)

44057 and 44058. VICIA FABA L. Fabaceæ.**Broad bean.**

From Tiflis, Caucasus, Russia. Presented by the chief specialist, Plant Breeding Department, Tiflis Botanic Garden. Received January 2, 1917.

44057. Beans nearly circular in outline and of a dark reddish brown color.

44058. Beans approximately oblong and of a much lighter color.

44059 and 44060.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 12, 1917.

44059. CHAMAEDOREA sp. Phœnicaceæ.**Pacaya palm.**

"(No. 79a. *Pacaya* palm from Coban, December 13, 1916.) Nearly every garden in Coban contains a number of these small, attractive palms, planted not so much for ornament as for the edible inflorescences

44059 and 44060—Continued.

which they produce. In other parts of Alta Vera Paz the pacaya is also quite common, and it is grown in the southern part of Guatemala as well. Since it succeeds here at elevations of 5,000 feet or even higher, where the winters are quite cool, it would seem that it ought to be a success in southern California and Florida, though it is difficult to predict what effect the sandy soil of the latter State may have upon it. The palm grows to a height of 15 feet, having a slender stem about 2 inches in diameter and handsome leaves, somewhat reminding one of *Chrysalidocarpus lutescens* (*Areca lutescens*). The foliage is of a rich-green color. The inflorescences are produced along the trunk in the winter and spring, and apparently more or less throughout the year. Before the spathe has opened it is removed from the palm, opened, and the tender inflorescence, nearly white in color and finely branched, is removed and eaten. Its preparation for the table consists in dipping it in a batter made of eggs and then frying it; in enveloping it in an omelet; in boiling it and serving it as a vegetable; or in mixing it with other vegetables to form a salad. When very young and tender its flavor is agreeable, but when older and nearly ready to emerge from the spathe it has a strongly bitter taste, which makes it disagreeable. It should therefore be used when quite young. The pacaya palm grows in a variety of soils, seeming to do well on clay and also on black sandy loam. An abundance of lime in the soil does not seem to injure it. It is frequently planted in gardens among coffee bushes, and in many sections it is planted beneath large trees, where it has partial shade. I have seen many beneath large avocado trees, interplanted with coffee bushes. It may be necessary to furnish shade for the palms in California and Florida by means of a slat house or some such device, or they might be planted beneath large trees, as they are in Guatemala. The pacaya as an article of food is extensively used in Guatemala and by local standards commands a good price, single inflorescences usually selling at two to five for a peso (2½ cents). The spathes are pulled from the palms, tied together in small bundles, and thus brought to market." (*Popenoe*.)

44060. *VITIS TILIAEFOLIA* Humb. and Bonpl. Vitaceæ. **Grape.**
(*V. caribaea* DC.)

"(No. 81a. Guatemala, Guatemala, December 29, 1916.) A native grape sold in the markets of Guatemala. The bunches are about the size of those of *Vitis caribaea* and the berries very similar; it may, in fact, be this species, though I do not know whether or not *V. caribaea* occurs in Guatemala. The fruit is used to make jelly. For trial in southern Florida in connection with the work of producing a grape adapted to tropical and subtropical conditions." (*Popenoe*.)

44061. *ALEURITES TRISPERMA* Blanco. Euphorbiaceæ.
Soft lumbang.

From the Philippine Islands. Presented by Mr. A. W. Prautch, through Mr. Adn. Hernandez, director, Manila Bureau of Agriculture. Received January 22, 1917.

"Mr. Prautch has returned from his trip to Cavite Province with seeds and leaves of *Aleurites trisperma*. The nuts were picked up under the trees, where they had been lying since last August, in which month the tree fruits. As you have already successfully introduced *Aleurites moluccana* in the United States,

it is quite possible that *A. trisperma* will also be successful. It is believed that the soft-shelled kind (*A. trisperma*) is superior, for in addition to the nut being easier to crack, the Bureau of Science has found that the oil so closely approximates the Chinese tung oil as to be practically indistinguishable therefrom. There is a slight difference between this oil and that of *A. moluccana*." (*Hernandez*.)

44062. TRITICUM AESTIVUM L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

From Yokohama, Japan. Purchased from the Yokohama Nursery Co.
Received January 22, 1917.

"Grown on the slope of Mount Fuji." (*S. Iida*.)

44063. AVENA SATIVA L. Poaceæ.

Oats.

From Paris, France. Presented by Messrs. Vilmorin-Andrieux & Co.
Received January 30, 1917.

"Very early black hybrid." (*Vilmorin-Andrieux & Co.*)

44064 and 44065.

From Londiani, Kenia. Presented by Mr. J. H. Cameron, Londiani Farms (Ltd.). Received January 30, 1917.

44064. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

"This seed grows in my garden; it is a cultivated plant, but I do not know where it comes from; it is in every garden hereabouts. We call it the *Cape tomato*, but it is not a tomato, nor do I suppose that it ever saw the Cape, i. e., the Cape of Good Hope. The early settlers in this country mostly came up from the Cape after the South African war, and got into the habit of calling everything they saw after something else that they knew in South Africa. It is a tree growing up to 10 feet high, with large glossy green and purple leaves. The fruit is exactly like an English plum, both in size and appearance (an average one I have here on my desk, plucked at random, measures $2\frac{1}{2}$ inches in length and 6 inches in circumference); the skin is purple and the flesh a bright yellow; like *Physalis peruviana* it can be eaten raw, stewed, made into jam, or, as you say in America, preserves, and used in making pies. It does not grow wild here and must have been brought from some other country, probably by missionaries." (*Cameron*.)

44065. PHYSALIS PERUVIANA L. Solanaceæ.

Poha.

"Seeds of an economic plant which we call the *Cape gooseberry*. A yellow-colored fruit about the size of a large cultivated cherry, but round and not oval like a real gooseberry. It is a most excellent fruit to eat either raw or stewed, and it can be eaten with cream, in pies, or preserved. It is very prolific, rather in danger of becoming a weed and running away with the garden, but not any more so than your own raspberry or blackberry. As to habitat, I find it growing as low as 6,000 feet above the level of the sea, which is low for East Africa. Here at Londiani it is very plentiful. We are 8,000 feet above sea level. It grows in cultivated gardens and also wild by the roadside and in wild bushy places. I was astonished on one occasion to find it growing most profusely away up on the top of Mount Londiani at 10,000 feet above

44064 and 44065—Continued.

sea level, on which occasion I may say it about saved my life. I had ridden up there at dawn for the purpose of shooting buffalo, which I did, and then lost my guides in a great bamboo forest and wandered about for many hours; I finally came to an open place and found many of these plants growing, and being very hungry I devoured many of the fruits. I found them both meat and drink." (*Cameron.*)

44066. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Oilla, Tex. Tubers presented by Mr. S. Kato. Received January 24, 1917.

"*Yatsu-gashira-imo.* A Japanese variety of taro of the dasheen type. It is said to be the best variety grown in Japan. These specimens grown in Texas, though very small, were mealy and of fine flavor." (*R. A. Young.*)

44067. VICIA FABA L. Fabaceæ. Broad bean.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul. Received January 23, 1917.

"Seeds of the broad bean, called by the Dutch *Duivenboon.*" (*Mahin.*)

44068. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Hangchow, China. Presented by Dr. D. Duncan Main. Numbered February 5, 1917.

A variety sent in without description.

44069. ZIZANIA LATIFOLIA (Griseb.) Stapf. Poaceæ. Wild rice.

From China. Plants collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received January 3, 1917.

"(No. 1261. Peking, China, November 20, 1916.) A Chinese wild rice, cultivated in standing water. The young sprouts are eaten in the spring, while later on the shoots, swollen through the action of a fungus, are eaten in much the same way as bamboo. Chinese name *chiao pai.*" (*Meyer.*)

For an illustration of the shoots of wild rice, known as kau ba, used as a vegetable, see Plate II.

44070 and 44071.

From Wellington Point, near Brisbane, Queensland, Australia. Presented by Mr. James Pink. Received January 22, 1917.

44070. CARICA PAPAYA L. Papayaceæ. Papaya.

"Seeds of a good variety of papaw, grown from seed of my own selection." (*Pink.*)

44071. CASSIA EREMOPHILA A. Cunn. Cæsalpiniaceæ.

"A very handsome flowering shrub." (*Pink.*)

A woody plant, found in Australia in all the colonies except Tasmania. The leaves are composed of two pairs of very narrow leaflets, and the pods are very smooth. In Australia both the pods and the leaves of this plant are eaten by stock. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 121, and from *Vogel, Synopsis Generis Cassiæ*, p. 47, as *Cassia nemophila.*)

44072. SIDEROXYLON AUSTRALE (R. Br.) Benth. and Hook. Sapotaceæ.

From Brisbane, Australia. Presented by Mr. J. F. Bailey, director, Botanic Gardens. Received January 22, 1917.

A tree, sometimes attaining a large size, from southeastern Australia. The leaves, which are quite variable in shape, are mostly 3 to 4 inches long, and the flowers occur in axillary clusters. The purplish, nearly round fruits are 2 inches in diameter and are of a coarse, insipid flavor. The wood is dark colored, close grained, prettily veined, and is used for cabinetwork, carving, etc., but requires careful seasoning. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 367-368, as *Achras australis*, and from *Bailey, Queensland Flora*, p. 958.)

44073 to 44075.

From Ceylon. Presented by Father Jerome, St. Leo College, St. Leo, Fla. Received January 22, 1917.

44073. DEGUELIA DALBERGIODES (Baker) Taub. Fabaceæ.
(*Derris dalbergioides* Baker.)

A small, spreading tree, 15 to 20 feet high, found in the Malay Archipelago and Java. The branchlets are brown-silky, the dark green, compound leaves are 6 to 8 inches long; the rose-colored flowers are in numerous short-stalked racemes; and the thin, flat pods are up to 2½ inches long. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 241.)

44074. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.
(*L. flos-reginae* Retz.)

A tree, 50 to 60 feet in height, with leaves from 4 to 8 inches long and large panicles of flowers, which vary from rose to purple, changing color during the day. This is the chief timber tree in Assam, eastern Bengal, India, and also in Burma. It occurs along river banks and on low swampy ground and is commonly cultivated as an avenue tree. No special care is used in growing this tree, which is felled when from 30 to 50 years of age. The timber is used for shipbuilding, boats, etc., being very durable under water. It has been introduced into southern California. (Adapted from *Watt, Commercial Products of India*, p. 701, and from *Bailey, Standard Cyclopædia of Horticulture*, p. 1775.)

44075. RHUS RUFA Teijsm. and Binn. Anacardiaceæ.

An erect, smooth-barked tree, native of the peninsula of Menado, island of Celebes, and Dutch East Indies, with leaves composed of 12 to 14 pairs of oblong lance-shaped leaflets, with reddish hairy lower surfaces, and axillary and terminal panicles of white sessile flowers. The fruits are black, dry, nearly globular drupes containing kidney-shaped seeds. The inhabitants of Menado call this *Kajoe-Kambling*. (Adapted from *J. E. Teijsman and S. Binnendijk, Natuurkundig Tijdschrift voor Nederlandsch Indië*, vol. 27, p. 52.)

44076 to 44084.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum. Received January 22, 1917.

44076. CALLICARPA GIRALDIANA Hesse. Verbenaceæ.

An ornamental shrub from western China, with dentate leaves 2 to 4 inches long, dense cymes of pink flowers on hairy stalks, and violet fruits.

44076 to 44084—Continued.

If sheltered this shrub will grow in the northern parts of the United States, and if killed to the ground young shoots will spring up vigorously, producing flowers and fruits in the same season. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 629, as *C. giraldii*.)

44077. COTONEASTER AMBIGUA Rehd. and Wils. Malaceæ.

See S. P. I. No. 43989 for previous introduction and description.

44078. COTONEASTER GRACILIS Rehd. and Wils. Malaceæ.

A shrub from western China, where it is found at altitudes of from 5,000 to 10,000 feet. It attains a height of 4 to 10 feet and has light-green leaves up to four-fifths of an inch long. The rose-colored flowers occur in lax 3-flowered corymbs and the immature fruits are about one-fifth of an inch long. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 1, pp. 167-168.)

44079. COTONEASTER HUPEHENSIS Rehd. and Wils. Malaceæ.

A shrub native of central and western China, up to 5 feet in height, with slender spreading branches, oval or elliptic leaves with gray wool on the lower surfaces, 6 to 12 white flowers in each of the numerous cymes, and red, nearly globular fruits about one-third of an inch in diameter. This is one of the handsomest of cotoneasters in bloom, and is hardy as far north as Massachusetts. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 867.)

44080. COTONEASTER NITENS Rehd. and Wils. Malaceæ.

See S. P. I. No. 43993 for previous introduction and description.

44081. COTONEASTER OBSCURA Rehd. and Wils. Malaceæ.

See S. P. I. No. 43994 for previous introduction and description.

44082. COTONEASTER RACEMIFLORA MEYERI Zabel. Malaceæ.

A low, rather rough shrub from northern Africa and western Asia, with roundish blunt leaves, slightly hairy on the upper surfaces, short-stalked cymes of white flowers, and red fruits. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754, as *C. racemiflora nummularia*.)

44083. COTONEASTER RACEMIFLORA SOONGORICA (Reg. and Herd.) C. Schneid. Malaceæ.

An erect shrub, up to 4 feet in height, but rarely prostrate. The leaves are oval and usually somewhat obtuse, and the white flowers occur 3 to 12 in short-peduncled cymes. The fruit is red. This variety is found in northern China, Caucasia, etc. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 867, and from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754.)

44084. COTONEASTER TENUIPES Rehd. and Wils. Malaceæ.

See S. P. I. No. 43995 for previous introduction and description.

44085. GARCINIA DIOICA Blume. Clusiaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received January 23, 1917.

"The fruit of this tree is eaten." (*Buysman*.)

A Javanese tree up to 60 feet high, with membranous, lance-shaped, sharp-pointed leaves up to 5 inches long, pink flowers in few-flowered axillary or terminal clusters, and nearly globular fruits up to 1½ inches in greatest diameter.

The natives of Java call this tree *tjeuri* and *kemedjing*. The wood is of little use, but in some portions the fruits are sought for the sake of the taste of the seed coats. (Adapted from *Koorders and Valeton, Boomsorten op Java. Bijdrage No. 9, pp. 369-372.*)

44086. CAMPOMANESIA FENZLIANA (Berg) Glaziou. Myrtaceæ.

From Parana, Brazil. Presented by Mr. B. H. Hunnicutt, Lavras, Minas Geraes, Brazil. Received January 25, 1917.

Guabiroba. A small Brazilian myrtaceous tree with foliage resembling that of the European oaks. It reaches a height of 30 to 35 feet and bears orange-yellow fruits, up to an inch in diameter, with edible pulp resembling that of the guava. (Adapted from *note of Dorsett, Shamel, and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37834 for further description.

44087 to 44091.

From Linao, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, Linao Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 22, 1917.

44087. CITRUS EXCELSA Wester. Rutaceæ. Limon real.

A tall, thorny Philippine shrub of vigorous growth and straggly habit, with thick, leathery leaves and thin-skinned smooth fruits up to 3 inches in diameter, with very juicy, mildly acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 22.*)

See also S. P. I. No. 41714 for further description.

44088. CITRUS MEDICA NANA Wester. Rutaceæ. Dwarf citron.

A small thorny shrub, rather common in the Philippines, rarely exceeding 2 meters in height, being probably the smallest species in the genus. It has small, sharp spines; narrowly oblong, serrate leaves 7 to 11 cm. long; axillary or terminal, rather loose cymes of white flowers with slight purple tinges on the outside; and roundish egg-shaped, smooth, yellow fruits $2\frac{1}{2}$ inches or more long, with grayish to greenish, acid, rather dry pulp containing many small flattened, smooth seeds. The Filipinos eat the fruit, but it is too dry to be cultivated for the flesh, and the skin is too thin to be used as citron peel. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 19.*)

See also S. P. I. No. 39581 for further description.

44089. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. A small, thorny Philippine shrub about 8 feet in height, with rather thick, serrate leaves, white flowers, and fruits up to 4 inches in diameter, with somewhat dry, sharply acid pulp. (Adapted from the *Philippine Agricultural Review, first quarter, 1915, p. 18.*)

See also S. P. I. No. 41717 for further description.

44090. GENIPA AMERICANA L. Rubiaceæ. Genipa.

A large stately tree, native of the American Tropics, growing 60 feet in height, with dark-green leaves a foot or more long. The edible fruits are about the size of an orange. (Adapted from *note of Dorsett and Popenoe, April 13, 1914.*)

See also S. P. I. No. 37833 for further description.

For an illustration of the Brazilian genipa, see Plate III.



THE BRAZILIAN GENIPA (*GENIPA AMERICANA*, S. P. I. No. 44090).

Outside of its native region this fruit is little known. In eastern Brazil it is commonly used, and it is also grown in the West Indies. The russet fruits, sometimes nearly 4 inches long, have the flavor of the quince. The tree can be grown only in regions free from severe frosts. See also S. P. I. No. 34882. (Photographed by P. H. Dorsett, Bahia, Brazil, November 12, 1913; P25009FS.)



THE IMODON ASH OF TURKESTAN (*FRAXINUS POTAMOPHILA*, S. P. I. No. 44132).

During his expedition to Chinese Turkestan, Mr. Meyer took the photograph reproduced above at Khanaka and obtained some of the seeds shown hanging on the tree. This species of ash, under the trying conditions of great drought, intense heat, and soil alkali of that region, made a valuable shade tree. Under S. P. I. No. 30652; the trees grown from these seeds were distributed in 1912. In 1915, some young trees were growing at the Fallon Field Station in Nevada. These promised so much for that treeless region that, through the kindness of the British vice consul, Mr. George MacCartney, more seeds (S. P. I. No. 44132) were imported, with which to make a wide distribution. (Photographed by Frank N. Meyer, Khanaka, Chinese Turkestan, December 5, 1910; P5647FS.)

44087 to 44091—Continued.**44901. UVARIA RUFA (Dunal) DC. Annonaceæ.**

Banauac. A much-branched shrub from Java with a stem about the diameter of a man's arm; alternate, elliptic-oblong, acute or obtuse leaves $2\frac{1}{2}$ to 5 inches long; and purplish red, solitary flowers about an inch wide. The oblong, kidney-shaped, red fruits about $1\frac{1}{2}$ inches long, in bunches of 18 or 20, contain whitish, scant, juicy, aromatic, subacid flesh without a trace of sugar and containing many seeds. (Adapted from *Blume, Flora Java, Annonaceæ*, pp. 19-20, pl. 4, and from the Philippine Agricultural Review, vol. 6, no. 7, p. 321.)

44092. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook. f.)

From Darjiling, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received January 29, 1917.

"Freshly gathered seed." (*Cave.*)

A tree 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas at elevations of from 4,000 to 7,000 feet. The slender branches are covered with flat, smooth leaves 4 to 7 inches long and bear yellowish white flowers a quarter to one-third of an inch wide in many-flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

See also S. P. I. No. 41813 for previous introduction.

44093. EUCHLAENA MEXICANA Schrad. Poaceæ. Teosinte.

From Zomba, Nyasaland. Presented by Mr. J. Stewart J. McCall, Director of Agriculture. Received January 30, 1917.

"Out in Nyasaland I find this a most valuable forage plant, either when fed green to cattle or as hay. I consider it to be the best yielding forage plant I have yet experimented with, and I believe it worthy of special attention in warm districts." (*McCall.*)

44094. ROLLINIA sp. Annonaceæ.

From Bogota, Colombia. Presented by Mr. M. T. Dawe, Director of Agriculture and Agricultural Adviser to the Government. Received February 2, 1917.

"A shrub of the tropical parts of the Department of Magdalena, which affords an edible orange-colored fruit; the flesh is also of orange color." (*Dawe.*)

44095. ALEURITES FORDII Hemsl. Euphorbiaceæ. Tung-oil tree.

Plants grown at the plant-introduction field stations from seed received from various sources. Numbered for convenience in distribution in 1917.

Plants grown under Yarrow Nos. 2157, 2158, 2159, 3522, and Chico No. 16151.

44096 to 44098.

From Amoy, China. Presented by Mr. H. Hoyle Sink, American consul. Received January 11, 1917.

44096. ANDROPOGON INTERMEDIUS R. Br. Poaceæ. Grass.

An erect grass, with rather narrow leaves and slender spikes, growing in large clumps 2 feet or more in height. It is a native of Australia,

44096 to 44098—Continued.

where it is used as a forage grass. It is readily propagated from the roots. (Adapted from *Bentham and Mueller, Flora Australiensis*, pp. 531-532, and from the *Agricultural Gazette, New South Wales, May 2, 1914.*)

44097. ARTHRAXON BREVIAURISTATUS Hack. Poaceæ.

Grass.

A tall, graceful grass found in eastern India and China, with culms 50 to 60 cm. high and leaf blades up to 2 inches in length by half an inch in width. (Adapted from *DeCandolle, Monographia Phanerogamarum*, vol. 6, pp. 350-351, 1889.)

44098. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ.

Bermuda grass.

(*Cynodon dactylon* Pers.)

A pasture and lawn grass for the Southern States; a rather variable species.

44099. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, Harvard Experiment Station. Received February 3, 1917.

"Harvard No. 6301. Seeds of one of my hybrid canes, which is very prolific and germinates freely when sown in the open ground here." (*Grey.*)

44100. CANARIUM AMBIONENSE Hochr. Balsameaceæ.

From Buitenzorg, Java. Presented by the director, Jardin Botanique. Received February 3, 1917.

This beautiful tree, which grows to a height of about 90 feet, so resembles *Canarium moluccanum* in general habit and in the leaves that the two can scarcely be distinguished, although the fruit is different. The bark is smooth and white. The fruit of this species is oblong, pointed at both ends, with the angles sharp toward the ends and somewhat flattened toward the middle. This tree is found in the island of Amboina, Celebes. (Adapted from *Hochreutiner, Plantae Bogoriensis Exsiccatae*, p. 55.)

"The seeds are eaten as a table nut, and an emulsion of the oil extracted from the seed is considered an excellent baby food." (*Fairchild.*)

44101. CANARIUM OVATUM Engl. Balsameaceæ.

Pili nut.

From Camarines, Philippine Islands. Presented by Dr. E. B. Copeland, dean, College of Agriculture, Los Banos, P. I. Received February 8, 1917.

A tree, native of the Philippines, with compound leaves and triangular drupes containing one seed. These seeds are eaten throughout the eastern part of the world, and from them is extracted an oil which is used for table purposes and also for burning in lamps. (Adapted from *notes of H. H. Boyle, assistant horticulturist, Manila, P. I.*)

See also S. P. I. No. 38372 for further distribution.

44102. PYRUS COMMUNIS L. Malaceæ.

Pear.

From Hamilton City, Calif. Presented by Mr. James Mills. Received January 18, 1917.

"Scions from an old pear tree that was planted by the Mission Fathers about 60 years ago. This tree has not shown any evidence of pear-blight, although blighted trees have been growing in its vicinity." (*Peter Bisset.*)

44103. HELIANTHUS ANGUSTIFOLIUS L. Asteraceæ. Sunflower.

Grown at the Plant Introduction Field Station, Chico, Calif., from seed collected by Dr. David Griffiths. Numbered February 13, 1917.

"This native sunflower is said to occur from New Jersey to Florida and westward to Texas. It attracted the collector's attention in a native condition on the prairies of Arkansas, where it grows most luxuriantly. There are several characteristics which adapt it to ornamental uses: The general habit of the plant is pleasing; it has a small flower with long, graceful rays; the foliage is narrow, long, drooping, and glossy; the main stem and each of its branches are long, graceful peduncles; but, best of all, it will cut and come up again and is perennial in habit. These characteristics make this plant valuable for tall massing effects, like the cosmos, as well as for cutting purposes. The seed distributed this season is from a single variety of this very variable and widely distributed species. Many other forms exist, and doubtless in the hands of horticulturists it will be found capable of much improvement. Some of its varieties are bushy, and all can be pinched back to a bushy form." (Griffiths.)

44104. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Honolulu, Hawaii. Cuttings presented by Mr. Donald MacIntyre. Moanalua Gardens. Received February 8, 1917.

"*Moanalua*. A chance seedling 19 years of age growing on the estate of Hon. S. M. Damon, Moanalua. Form pyriform; size small to medium; cavity flaring, deep; stem somewhat short, rather thick; surface undulating, hard, coriaceous and slightly pitted; color dark green with medium abundant small irregular-shaped yellowish dots; apex a mere dot; skin medium thick, separating readily from the pulp; flesh yellowish in color, running into green at the rind, fine grained, melting and somewhat buttery, 70 per cent of the fruit; seed medium large, conical, fitting tightly in the seed cavity; flavor rich and nutty. Season, July to September. The tree is very vigorous. Height, 30 feet, spread 25 feet." (*Hawaii Agricultural Experiment Station Bulletin No. 25, p. 43.*)

"*Moanalua*, the round variety. This is not an easy thing to bud, and all the plants we have have been inarched. A good avocado, one of our best, it is a late variety, however, and on that account might not be as suitable for the climate of Florida as some of the early kinds." (MacIntyre.)

44105 to 44107. TRIFOLIUM PRATENSE L. Fabaceæ. Red clover.

From Denmark. Presented by Mr. H. Hertel, Danish Royal Agricultural Society, Copenhagen. Received February 8, 1917.

44105. "*Tystofte* No. 71, an early red clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. The seed raising of early red clover in general is, at the present time, sparse here in Denmark, where favorable conditions for the fecundations are lacking.

"For further information, see the 70th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 216." (Hertel.)

44106. "*Tystofte* No. 87, a late clover. Furnished by the experimental station at Tystofte, near Tjaereby on Sealand. This is a new form, obtainable so far only in small quantities.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (Hertel.)

44105 to 44107—Continued.

44107. "*Hersnap*, a late red clover. Furnished by the seed-raising society (Danske Landboforeningers Frøforsyning), Roskilde. This is the best species, being used largely at the present time.

"For further information, see the 95th Beretning fra Statens Forsøgsvirksomhed i Plantekultur, page 392." (*Hertel.*)

44108. DIOSPYROS KAKI L. f. Diospyraceæ.**Kaki.**

From Kioshan, Honan, China. Cuttings presented by Dr. Nathanael Fedde, American Lutheran Mission. Received January 22, 1917.

"The Honan red persimmon is of a size like that of the average tomato, and were it not for the large stiff calyx would be almost indistinguishable from one. Commonly, no seeds occur, but some have as many as four or five. The taste is sweet almost to a fault, with no suggestion of pucker unless the core is eaten. The juice leaves a permanent stain in linen." (*Fedde.*)

44109. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Santiago de las Vegas, Cuba. Presented by Mr. J. T. Crawley, director, Agricultural Experiment Station. Received February 12, 1917.

"*Demerara 74.*"

44110. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Brooksville, Fla. Presented by Mr. James Jennings, through Mr. J. E. Morrow. Received February 12, 1917.

"Seeds of a small-fruited highly flavored papaya. This tree seems to be unusually hardy and to endure considerable frost. Ripe fruit gathered from tree on February 5, 1917." (*Morrow.*)

44111 and 44112. CARICA PAPAYA L. Papayaceæ.**Papaya.**

From Pago Pago, American Samoa. Presented by Mr. J. M. Poyer, governor. Received February 12, 1917.

44111. "*Esi fafine.* Native of Samoa." (*Poyer.*)

44112. "*Esi palagi.* Introduced in Samoa." (*Poyer.*)

44113 and 44114.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

44113. *AESCHYNOMENE* sp. Fabaceæ.

Yellow sensitiva. See S. P. I. No. 44040 for previous introduction and description.

44114. *COCCOLOBIS UVIFERA* L. Polygonaceæ.

"*Jarra.* Dense, small tree, with small very light-green leaves. A fine plum; seed one-third to two-fifths of the whole fruit, subacid. Hot climate." (*Wercklé.*)

44115. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.**Tomato.**

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"*Tomate silvestre.*"

44116. FICUS PADIFOLIA H. B. K. Moraceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"This tree differs completely from the rest of the genus in its superb form. It is very large and very dense and of an exceptionally beautiful color. It is evergreen, while nearly all the other species are bare for a longer or shorter time during the dry season. The fruit is apparently very much liked by birds, and the trees are always full of little parrots. Plant in fibrous fern peat or in turf with a little old mortar (ground) and a little charcoal dust or in common vegetable peat with ground mortar (sand and lime) and charcoal dust." (Wercklé.)

44117. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Lima, Peru. Presented by Mr. E. E. Wright, at the request of Mr. W. G. Bixby, Brooklyn, N. Y. Received February 16, 1917.

"Cultivated Peruvian tomato from Lurin Valley." (Wright.)

44118. RHYNCHOSIA sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received January 29, 1917.

"*Yellow vetch*. A small blooming annual forage plant, growing now in the dry season, while the *yellow sensitiva* [S. P. I. No. 44113] is completely dried. After the *yellow sensitiva*, our best soil enricher." (Wercklé.)

44119. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.

From Buitenzorg, Java. Roots presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received February 14, 1917.

A shrub, 2 to 3 meters high, native of the Comoro Islands, Madagascar. The elliptic or ovate-oblong, fleshy, dark-green leaves are short petioled and usually thickly covered with little tubercles formed by bacteria. The greenish white flowers are in numerous dense thyrses up to 3 inches long, and the fruits are subglobular drupes about a quarter of an inch in diameter. (Adapted from Valetton, *Icones Bogorienses*, vol. 3, pl. 271.)

See also S. P. I. No. 44295 in this inventory for notes on these bacterial leaf nodules in the Rubiaceæ.

44120 to 44122. CHAYOTA EDULIS Jacquin. Cucurbitaceæ.

(*Sechium edule* Swartz.)

Chayote.

From Funchal, Madeira. Presented by Mr. J. E. Blandy. Received February 12, 1917.

"*Pipinella* or *chu-chu*." (Blandy.)

44120. Large smooth green.

44122. Large smooth white.

44121. Medium spiny green.

44123 to 44126.

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received January 5, 1917.

44123. CASSIA BICAPSULARIS L. Cesalpiniaceæ.

A shrub, found throughout tropical and subtropical South America and cultivated in tropical Asia, 2 to 3.5 meters high, with compound

44123 to 44126—Continued.

leaves up to 9 cm. long, yellow flowers, and curved or straight pods up to 15 cm. long by 1.5 cm. wide. In Porto Rico this shrub is known by the native names of *sen del pais* and *hoja de sen*. (Adapted from *Perkins, Contributions from the National Herbarium, vol. 10, p. 158.*)

44124. CROTALARIA JUNCEA L. Fabaceæ.**Sunn hemp.**

An erect yellow-flowered annual, 4 to 5 feet high, native of tropical Asia generally and commonly occurring in the dry region of Ceylon. It is cultivated in many places in India and also in northern Ceylon for the sake of the strong and useful fiber obtained from the stems. This fiber is used in India for making coarse canvas, cordage, and fishing nets, and an average yield is about 640 pounds an acre. A light, rich soil is considered best for growing this plant, although with cultivation it may be grown on almost any soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, pp. 549-550.*)

44125. GLYCOSMIS sp. Rutaceæ.

Received as *Glycosmis pleiogyne* for which no place of publication has been found. This is probably merely a garden name for a form of *G. pentaphylla*, a small spineless shrub with dark-green glossy leaves, small fragrant white flowers, and translucent pinkish berries.

44126. WIGANDIA URENS (Ruiz and Pav.) H. B. K. Hydrophyllaceæ.

A tall, coarse, woody perennial, from the mountainous regions of Mexico, with ovate, rusty hairy leaves, one-sided spikes of violet flowers, and densely hairy capsules. Propagation is generally by seed. The chief value of wigandias is as foliage plants for subtropical bedding; they can not endure frost. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 4, p. 1975.*)

44127. DAVIDIA INVOLUCRATA VILMORINIANA (Dode) Hemsl. Cornaceæ.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received February 10, 1917.

A western Chinese tree, 40 to 50 feet high, with alternate, bright-green, ovate, coarsely serrate leaves 2 to 4½ inches long and inconspicuous flowers in terminal, globular heads about an inch long. In the British Isles this tree is quite hardy, and though it can be propagated by cuttings the plants raised from seeds show the greatest vigor. (Adapted from *Curtis's Botanical Magazine, vol. 138, p. 8432.*)

44128. SOLANUM sp. Solanaceæ.**Wild potato.**

From Ciudad Lerdo, Durango, Mexico. Tubers presented by Dr. Elswood Chaffey, through Dr. J. N. Rose, United States National Museum. Received February 20, 1917.

"I have often heard of these native potatoes, but until now have not seen them. I presume that you already know them, but I think that sometimes a fresh lot may be useful to cross with the cultivated varieties to produce, if possible, a stock more resistant to the ills that potatoes may be prone to." (*Chaffey.*)

44129. DATURA DISCOLOR Bernh. Solanaceæ.

From Bard, Calif. Presented by Mr. C. E. Peterson, Yuma Experiment Farm. Received February 12, 1917.

A low, somewhat hairy, annual herb, found in Colorado, Arizona, and south-eastern California. It has more or less deeply toothed leaves and purplish white flowers 2 or 3 inches long. The thickish seeds are dark colored with wrinkled or pitted crustaceous coats. (Adapted from *Gray, Synoptical Flora of North America*, vol. 2, p. 240.)

44130. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 12, 1917.

An ornamental Mexican tree with oblong-oval glossy leaves about 4 inches long and light-green edible fruits up to 4 inches in diameter with very dark-brown sweetish pulp. (Adapted from *note of Wilson Popenoe, under S. P. I. No. 39719*, which see for further description.)

44131. HIBISCADELPHUS GIFFARDIANUS Rock. Malvaceæ.

From Honolulu, Hawaii. Presented by Mr. Joseph F. Rock, College of Hawaii. Received February 13, 1917.

A rather low Hawaiian tree with an inclined trunk about a foot in diameter, deep magenta flowers, and large yellowish capsules. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 299.)

See also S. P. I. No. 42879 for further description.

44132 to 44134. FRAXINUS POTAMOPHILA Herd. Oleaceæ. Ash.

From Kashgar, Chinese Turkestan. Presented by Mr. George MacCartney, British consul general, through Mr. Walter Hines Page, ambassador, London. Received February 15, 1917.

"*Imodon*. The consul general states that, so far as he is aware, there is no special difference of climate or soil between Kashgar or Khotan, nor is there any difference in the ash trees of these two places." (*Page*.)

44132. "Package No. 1. Seeds gathered at Kashgar."

44133. "Package No. 2. Seeds gathered at Kashgar."

44134. "Package No. 3. Seeds gathered at Kashgar."

See S. P. I. Nos. 30414 and 30652 for previous introductions.

For an illustration of the *Imodon* ash, see Plate IV.

44135 to 44142.

From the Philippine Islands. Presented by Mr. P. J. Wester, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received February 8, 1917.

44135. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

"Grown in Luzon Province."

44136. *CITRUS LIMETTA AROMATICA* Wester. Rutaceæ.

Dalayap. "No. 741. Grown in Luzon Province."

A spiny Philippine shrub collected at Palawan, with slender willowy branches, dull-green ovate-elliptic serrate leaves up to 10 cm. long,

44135 to 44142—Continued.

purplish white flowers borne singly or in terminal or axillary cymes, and roundish, smooth, lemon-yellow fruits 5 cm. long with thin skin, pale-green, juicy, sharply acid pulp, and very numerous small seeds. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, p. 25.)

44137 and 44138. CITRUS MEDICA NANA Wester. Rutaceæ.

Dwarf citron.

A small thorny shrub, collected at Cebu, rather common in the Philippines, with loose cymes of purplish white flowers and roundish egg-shaped, smooth, yellow fruits $2\frac{1}{2}$ inches or more long. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, p. 23.)

44137. "No. 27. Grown in Luzon Province."

44138. "No. 2384. Grown in Luzon Province."

44139. CITRUS MEDICA ODORATA Wester. Rutaceæ.

Tihi-tihi. "Grown in Luzon Province."

See also S. P. I. Nos. 41717 and 44089 for further description.

44140. CITRUS MITIS Blanco. Rutaceæ.

Calamondin.

"No. 2534. Grown in Luzon Province."

A small, somewhat spiny Philippine tree, 4 to 6 meters high, with oblong elliptic leaves up to 9 cm. long, axillary, usually solitary, white fragrant flowers 21 mm. wide, and globular, orange-yellow, smooth, thin-skinned fruits 2 to 4 cm. long, with orange-colored, acid, juicy pulp containing large, smooth seeds. The calamondin, both wild and cultivated, is widely distributed in the Philippines, and the trees are nearly always very prolific. (Adapted from the *Philippine Agricultural Review*, first quarter, 1915, pp. 12-13.)

"This is now widely distributed in Florida, under the incorrect name of Panama orange, from early distributions of S. P. I. No. 2886, which came from Panama." (*Fairchild.*)

44141. PENNISETUM CILIARE (L.) Link. Poaceæ.

Grass.

(*P. cenchroides* Rich.)

A low, spreading, perennial grass with short spikes.

44142. CARICA PAPAYA L. Papayaceæ.

Papaya.

"Grown in Cavite Province."

44143. AESCHYNOMENE sp. Fabaceæ.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received February 14, 1917.

"*Yellow sensitiva.* Best soil improver; not troublesome. Hand-picked seed; free from weeds." (*Wercklé.*)

See also S. P. I. Nos. 44040 and 44113 for previous introductions and description.

44144. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.

Velvet bean.

From Mowbray, Cape Province, South Africa. Purchased from Messrs. C. Starke & Co. Received February 14, 1917.

Kudu-Laing bean, said to be a hybrid velvet bean.

44145 to 44151.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44145. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

"(No. 126b. Peking, China, December 29, 1916.) Twelve large and twelve small specimens of the Peking white pear, *Pai li*, some with and others without calyx." (Meyer.)

Received as *Pyrush simonii*, which is now referred by Mr. Rehder to *P. ussuriensis*.

44146. *PYRUS LINDLEYI* Rehder. Malaceæ. Pear.
(*P. sinensis* Lindl.)

"(No. 127b. Peking, China, December 19, 1916.) *Hung hsiao li*, meaning 'red smile pear.' A remarkable pear of apple shape, with a bright-red blush on one side, while the other side is yellowish, often tinged with green; meat sour and hard; calyx deciduous; peduncle long. A very good keeper and shipper. Of value in breeding experiments. Scions sent under No. 1266 [S. P. I. No. 44164]." (Meyer.)

44147. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

"(No. 128b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'big sour pear,' *Ta suan li*, showing size and persistency of calyx. Scions sent under No. 1272 [S. P. I. No. 44169]." (Meyer.)

44148. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

"(No. 129b. Tsunhwachow, Chihli Province, China, December 9, 1916.) Specimens of the 'eight li fragrant pear,' *Pa li hsiang li*. Notice persistent calyx, short peduncle, and fine aroma." (Meyer.)

44149. *PICEA MEYERI* Rehd. and Wils. Pinaceæ. Spruce.

"(No. 133b. Shinglungshan, Chihli Province, China, December 3, 1916.) A tall-growing spruce, often having bluish needles." (Meyer.)

"This quadrangular-leaved spruce is characterized by its hairy shoots, curved nonpungent leaves, and medium-sized symmetrical cones with rounded or truncate scales. It is most closely related to *Picea gemmata* Rehd. and Wils., which has similarly hairy shoots, more densely hairy buds, very pungent leaves, and larger cones with much broader scales. It is also related to *P. asperata* Masters, which has paler, more yellow, less pubescent shoots, slightly pungent leaves, larger cones with rhombic scales paler in color, and winter buds with more loosely appressed and more recurved scales. The shoots in *P. meyeri* show great variation in degree of pubescence, and this is not constant from year to year on the same branch. One year a shoot may be densely pubescent and the next year the new shoot on the same branch almost glabrous." (Sargent, *Plantae Wilsonianae*, vol. 2, p. 28-29.)

44150. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

"(No. 2354a. Malanyu, Chihli Province, China, December 7, 1916.) *Ta tzü hsiang li*, meaning 'Tartar fragrant pear.' A small variety of Chinese pear, of globose form, having a persistent calyx and a short peduncle; color greenish; flesh of aromatic, pleasant tart flavor becoming melting in December. This pear possibly may prove to be immune to pear-blight." (Meyer.)

44145 to 44151—Continued.**44151. PYRUS USSURIENSIS Maxim. Malaceæ.****Pear.**

“(No. 2355a. Malanyu, Chihli Province, China, December 7, 1916.) *Suan li*, meaning ‘sour pear.’ A medium-sized Chinese pear of globose form and of green color. Calyx persistent, length of peduncle varies considerably in different specimens. Flesh somewhat gritty and quite sour. This pear can not be eaten raw except when it has been once frozen, after which it becomes melting. By cooking them, however, a sour sauce can be obtained, which missionaries find acceptable as a substitute for sour apple sauce. Possibly this pear also may be found to be resistant to pear-blight.” (*Meyer.*)

44152 to 44156. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Bridgetown, Barbados, British West Indies. Seeds presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44152. “B. H. 10 (12). One of the best, if not the best, of all the sugar-cane seedlings I have as yet grown. The average sucrose content of this cane for three years was 2.33 pounds per gallon.” (*Bovell.*)

44153. “Ba. 6032.”**44155.** “B-7169.”**44154.** “Ba. 7924.”**44156.** “B-6308.”**44157 to 44162. SACCHARUM OFFICINARUM L. Poaceæ.****Sugar cane.**

From Bridgetown, Barbados, British West Indies. Cuttings presented by Mr. John R. Bovell, Superintendent of Agriculture. Received February 17, 1917.

44157. “B-6450.”**44158.** “B-7169.”**44159.** “B. H. 10 (12).” See S. P. I. No. 44152.**44160.** “Ba. 2471.”**44161.** “Ba. 6032.” See S. P. I. No. 44153.**44162.** “Ba. 7924.” See S. P. I. No. 44154.**44163 to 44174.**

From China. Cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44163. PYRUS USSURIENSIS Maxim. Malaceæ.**Pear.**

“(No. 1265. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)”

See S. P. I. No. 44151 for description.

44164 to 44168. PYRUS LINDLEYI Rehder. Malaceæ.**Pear.***(P. sinensis Lindl.)*

44164. “(No. 1266. Maoshan, near Malanyu, Chihli Province, December 8, 1916.)”

See S. P. I. No. 44146 for description. Seeds were received under No. 127b [S. P. I. No. 44146].

44163 to 44174—Continued.

44165. "(No. 1267. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Fo t'ien hsi li*, meaning 'Emperor's beloved pear.' A medium-sized pear of somewhat compressed shape, yellow at the base and russet-brown toward the peduncle, calyx deciduous, peduncle medium long, flesh hard, but juicy and sweet. A good keeper and shipper. Of value in breeding experiments." (Meyer.)

44166. "(No. 1268. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Ma li*, meaning 'dotted pear.' A medium large pear of waxy yellow color, with little dots scattered over the skin, especially near the peduncle. Flesh hard, sweet, and a trifle coarse; calyx deciduous. Of value in breeding experiments." (Meyer.)

44167. "(No. 1269. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Chin hsing mi li*, meaning 'golden star honey pear.' A rather small pear, of canary-yellow color; flesh hard, but juicy and sweet; a good keeper. Some specimens have well-developed persistent calyxes, while in others they are absent; peduncles long. Of value in breeding experiments." (Meyer.)

44168. "(No. 1270. Maoshan, near Malanyu, Chihli Province, December 8, 1916.) *Tz'ü li*, meaning 'pointed pear.' An interesting pear, of medium-large size and a tublike shape; color yellow with rosy red blush; meat firm, juicy, sweet, and of good flavor; a good keeper and of very attractive appearance. Of value in breeding experiments." (Meyer.)

44169. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

"(No. 1272. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ta suan li*, meaning 'big sour pear.' An improved form of sour pear, being larger and juicier than No. 2355a [S. P. I. No. 44151]. Otherwise the same remarks apply to it." (Meyer.)

44170 to 44174. *PYRUS LINDLEYI* Rehder. Malaceæ.
(*P. sinensis* Lindl.)

Pear.

44170. "(No. 1273. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ts'ü li*, meaning 'pointed pear.'"

See S. P. I. No. 44168 for description.

44171. "(No. 1274. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Ê li*, meaning 'goose pear.' An elongated, yellow pear, ripening in September and not possessing keeping qualities. Of value in breeding experiments." (Meyer.)

44172. "(No. 1276. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *P'in ti ch'iu pai li*, meaning 'applelike autumn white pear.' A variety of pear said to be flat, apple shaped, with a broad base; of yellow color. Possesses keeping qualities." (Meyer.)

44173. "(No. 1277. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.) *Chien ti ch'iu pai li*, meaning 'pointed-base autumn white pear.' A variety of pear said to be like No. 1276 [S. P. I. No. 44172], but having a tapering base." (Meyer.)

44174. "(No. 1278. Lowanyu, near Tsunhwachow, Chihli Province, December 8, 1916.)"

See S. P. I. No. 44167 for description.

44175 and 44176.

From China. Roots collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44175. IRIS DICHOTOMA Pall. Iridaceæ.

"(No. 1280. Near Malanyu, Chihli Province, November 24, 1916.) An iris found amidst stony débris on a hillside; apparently of very low growth." (*Meyer.*)

44176. PYRUS USSURIENSIS Maxim. Malaceæ.**Pear.**

"(No. 1281. Shinglungshan, Chihli Province, December 3 and 4, 1916.) A variety of pear, small in size, flattened, apple shaped, of russet-yellow color, occasionally with a slight blush covered with many small dots. Calyx persistent, peduncle short. Becomes soft in early winter and has a very pleasant tart flavor." (*Meyer.*)

44177. AMYGDALUS NANA × **PERSICA.** Amygdalaceæ.**Hybrid peach.**

From Excelsior, Minn. Cuttings presented by Mr. Charles Haralson, superintendent, Fruit Breeding Farm. Received February 23, 1917.

"A hybrid between *Amygdalus nana* and the Bokhara No. 3 peach. This hybrid grows to about 8 feet on *Prunus americana* stock, is perfectly hardy, and is the best bloomer in the spring of all the stone fruits. The tree produced an abundance of pink blossoms, larger than *Amygdalus nana*, but has never borne any fruit. The foliage is glossy dark green and stays on until the frost gets it in the fall." (*Haralson.*)

44178 to 44180.

From Seharumpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received February 14, 1917.

44178. AMARANTHUS PANICULATUS L. Amaranthaceæ. **Amaranth.**

Seeds secured from the Director of Agriculture, Kashmir.

A tall, handsome plant, 4 to 6 feet high, cultivated in eastern and western Asia and Africa. The lance-elliptic leaves are 2 to 6 inches long, and the numerous flowers are borne in dense red or gold-colored spikes. The subglobose seeds are white, red, or black, and because of their farinaceous nature form the staple food of the poorer classes of the hill tribes in many parts of India, where the plant is known as *rājgira*. (Adapted from *Cooke, Flora of the Presidency of Bombay, vol. 2, p. 489.*)

44179. MYRICARIA GERMANICA (L.) Desv. Tamaricaceæ.

A shrub, 6 to 8 feet high, related to Tamarix, found throughout most parts of Europe and the Himalayas. The flowers are pink and are borne in spikes. (Adapted from *Lindley, Treasury of Botany, vol. 2, p. 770.*) See also S. P. I. No. 39630 for further description.

44180. TRACHYCARPUS TAKIL Beccari. Phœnicaceæ.**Palm.**

"A further supply that I have just received from the original habitat." (*Hartless.*)

"A palm from Mount Takil, Himalaya, closely related to *Trachycarpus martiana*." (Note of A. C. Hartless, February 1, 1916.)

See S. P. I. No. 41871 for previous introduction.

44181 to 44183.

From the Philippine Islands. Presented by Mr. P. J. Wester, horticulturist, Lamao Experiment Station, through Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received January 23, 1917.

44181. *CALAMUS* sp. Phœnicaceæ.

Rattan.

"Seeds of the *litoco*, received from Kiangnan, northern Luzon. Fruits in branching racemes, 15 to occasionally more than 30 on a branch, sessile; 20 to sometimes exceeding 25 mm. in diameter, averaging 7 grams in weight, somewhat irregularly roundish, apex a black bony projection; the skin consists of a thin scaly shell that peels off the flesh like an egg-shell and is rather ornamental. As stated, the flesh separates perfectly from the skin and also divides into three segments, two of which are usually seedless; sometimes there are no seeds in the fruit. The flesh is light brown, subacid, with a very sprightly, pleasant flavor, somewhat astringent. In flavor the fruit resembles the lanzon more than any other that I have eaten, but is somewhat more tart. The seed is small and free from the pulp. The fruit is a good keeper, and in its native state undoubtedly is one of the best small fruits that I have ever come across. The *litoco* grows at an elevation of about 700 or more meters, where the rainfall is rather evenly distributed." (Wester.)

44182. *CECROPIA PALMATA* Willd. Moraceæ.

Trumpet tree.

A West Indian tree up to 50 feet in height. At the top of the long, thin, weak trunk are a few horizontal or deflexed awkward branches bearing large palmate leaves divided like thumbs, with white hairy lower surfaces. The branches and trunk are hollow, with partitions at the nodes, and ants often make their homes in them. The juice is milky, the flowers are very small, and the fruits are small 1-seeded nuts. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 2, p. 697.*)

44183. *GENIPA AMERICANA* L. Rubiaceæ.

Genipa.

See S. P. I. Nos. 37833 and 44090 for further description.

44184 to 44186. *SOLANUM* spp. Solanaceæ.

Wild potato.

From Lima, Peru. Tubers presented by the director, Ministerio de Fomento, Estacion Central Agronomica. Received February 23, 1917.

44184. *SOLANUM IMMITE* Dunal.

"Tubers of three plants of *Solanum immite* obtained from seeds in 1916."

44185. *SOLANUM MAGLIA* Schlecht.

A nearly glabrous wild potato, native of Chile, about 2 feet high, with angled, winged stems, compound light-green leaves 4 to 8 inches long, compound cymes of white flowers 1 inch wide, and subglobose or oblong tubers up to 1½ inches long, with smooth, reddish brown surfaces. When boiled the tubers shrink and become watery and insipid. (Adapted from *Curtis's Botanical Magazine, pl. 6756.*)

44186. *SOLANUM* sp.

"Harvested in Amancaes in October, 1916."

Received as *Solanum tuberosum sylvestre*; probably a wild species; to be grown for identification.

44187. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Honolulu, Hawaii. Presented by Mr. Gerrit P. Wilder. Received February 26, 1917.

See S. P. I. No. 44130 for description.

44188 to 44192.

From Santa Cruz, Argentina. Presented by Mrs. Helen E. Reynard, Hillside, Newark, England, through Mr. G. M. Hitch, American consul, Nottingham, England. Received February 19, 1917.

44188. CROTALARIA sp. Fabaceæ.

"Seeds of a close-growing plant with pea-shaped flowers, brownish yellow in color, sweet smelling." (*Reynard.*)

44189. OENOTHERA ODORATA Jacq. Onagraceæ. Evening primrose.

A suffrutescent Chilean plant with attractive yellow flowers which turn purplish before falling.

44190. VICIA sp. Fabaceæ. Vetch.

"Seeds of a mauve-blue vetch." (*Reynard.*)

44191. ASTER sp. Asteraceæ.

"Gentian-blue prickly flowers; close-growing plants in clumps on stony soil." (*Reynard.*)

44192. PODOCOMA sp. Asteraceæ.

"A bush with yellow flowers." (*Reynard.*)

44193. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From St. Lucia, British West Indies. Presented by the Agricultural Superintendent at the request of Hon. Francis Watts, Commissioner of Agriculture for the West Indies. Received February 27, 1917.

"*Christophine*; green variety. The green and white varieties appear to be the only ones known in these islands." (*Watts.*)

44194. INODES EXUL O. F. Cook. Phœnicaceæ. Palmetto.

From Victoria, Tex. Presented by Mr. J. R. Fleming. Received February 17, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from O. F. Cook, *Bureau of Plant Industry Circular 113*, pp. 11-14.)

See also S. P. I. No. 35116 for further description.

44195. CARICA PAPAYA L. Papayaceæ. Papaya.

From Fort Myers, Fla. Presented by Mr. Hans Zeman. Received February 27, 1917.

"Seeds from a 10-pound fruit." (*Zeman.*)

44196. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From Cairo, Egypt. Presented by the director, Horticultural Division, Ministry of Agriculture, Gizeh Branch. Received February 28, 1917.

44197 to 44200.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Field Station, Chico, Calif., February 21, 1917.

44197 and 44198. *CASTANEA MOLLISSIMA* Blume. Fagaceæ. Chestnut.

44197. "(No. 2324a. Peking, China, November 10, 1916.) A good quality of Chinese chestnuts, said to come from the Pangshan district to the northeast of Peking. Dark-colored nuts. Price, 7 cents (Mex.) per pound." (*Meyer.*)

44198. "(No. 2325a. Peking, China, November 10, 1916.) Chinese chestnuts of good quality, said to come from the Pangshan district to the northeast of Peking. Light-colored nuts. Price, 6 to 8 cents (Mex.) per pound." (*Meyer.*)

44199 and 44200. *JUGLANS REGIA* L. Juglandaceæ. English walnut.

44199. "(No. 2326a. Peking, China, November 10, 1916.) Chinese walnuts, large size, said to come from the mountains west of Peking. Price, 11 cents (Mex.) per catty. Chinese walnuts seem especially adapted to semiarid regions with warm summers and dry, cold winters." (*Meyer.*)

44200. "(No. 2327a. Peking, China, November 10, 1916.) Chinese walnuts, medium size, said to come from the mountains west of Peking. Price, 9 cents (Mex.) per catty." (*Meyer.*)

44201. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From Ceiba, Honduras. Cuttings presented by Mr. Francis J. Dyer, American consul. Received March 7, 1917.

"This tree grows on the property of Mr. Jos. Taranto, in the business quarter of La Ceiba. It is said to produce the best fruit known locally, and it certainly is better than any others I have seen in the local markets." (*Dyer.*)

44202. *MAMMEA AMERICANA* L. Clusiaceæ.

Mamey.

From Mount Coffee, Liberia. Presented by Mr. Henry O. Stewart. Received February 23, 1917.

A tree 40 to 50 feet high, native of tropical America and the West Indies, with large, leathery, shining leaves and white, scented flowers. The nearly spherical fruit is 3 to 5 inches in diameter, with a thick, barky skin and sweetish orange-colored pulp, which is eaten raw or stewed or preserved with sugar. The small flowers are sometimes distilled, the product thus obtained being used in flavoring liquors. Propagation is by seed. (Adapted from *Macmillan, Handbook of Tropical Gardening*, p. 169.)

44203 to 44238.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 9, 1917.

44203. *ZIZIPHUS JUJUBA* Mill. Rhamnaceæ.

Jujube.

(*Z. sativa* Gaertn.)

"(No. 2330a. Peking, China, December 16, 1916.) A small quantity of cleaned jujube stones, obtained mostly from large fruits. To be sown in California and in Texas to obtain new types." (*Meyer.*)

44203 to 44238—Continued.

44204. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 2332a. Malanyu, Chihli Province, China, November 25, 1916.) *Yü mi*, meaning 'imperial rice.' A large-grained yellow flint corn, cultivated on rich bottom lands in the mountains." (Meyer.)

44205. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ.(*P. ocymoides* L.)

"(No. 2333a. Malanyu, Chihli Province, China, November 25, 1916.) *Su tzü*. An odoriferous annual, the seeds of which contain a great percentage of oil which is used in waterproofing paper and cloth. They are also much fed to song birds in winter. The young tops are employed in giving flavor to certain pickles." (Meyer.)

44206. *CANNABIS SATIVA* L. Moraceæ.

Hemp.

"(No. 2334a. Malanyu, Chihli Province, China, November 25, 1916.) *Sheng ma*, meaning 'thread hemp.' A variety of hemp, producing very strong fiber of medium length. Thrives especially well on lands recently cleared of brush or timber." (Meyer.)

44207. *ABUTILON THEOPHRASTI* Medic. Malvaceæ.

Indian mallow.

(*A. avicennae* Gaertn.)

"(No. 2335a. Malanyu, Chihli Province, China, November 27, 1916.) *Ch'ing ma*, meaning 'green hemp.' A variety of Abutilon hemp, producing a very much stronger fiber than the common sort. Does especially well on rich bottom lands." (Meyer.)

44208. *FAGOPYRUM VULGARE* Hill. Polygonaceæ.

Buckwheat.

(*F. esculentum* Moench.)

"(No. 2336a. Malanyu, Chihli Province, China, November 25, 1916.) *Ch'iao mai*, meaning 'triangular wheat.' Chinese buckwheat, grown as a late crop on poor lands and on mountain slopes. From the flour a very thin and brittle vermicelli is manufactured, from which a meal can be prepared within a few minutes." (Meyer.)

44209 to 44214. *SOJA MAX* (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

"From Malanyu, Chihli Province, China, November 25, 1916."

44209. "(No. 2337a.) *Huang tou*, meaning 'yellow bean.' An early-maturing medium-sized yellow variety of soy bean, primarily used to make bean curd." (Meyer.)

44210. "(No. 2338a.) *Huang tou*, meaning 'yellow bean.' A late-maturing medium-sized yellow variety used for oil production and in making bean curd and sauce." (Meyer.)

44211. "(No. 2339a.) *Ta ch'ing tou*, meaning 'large green bean.' A pale-green variety, used in bean curd and sauce manufacture." (Meyer.)

44212. "(No. 2340a.) *Ch'ing tou*, meaning 'green bean.' A green variety, often used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (Meyer.)

44213. "(No. 2341a.) *Ch'ing tou*, meaning 'green bean.' A green variety, slightly different from No. 2340a [S. P. I. No. 44212]. Used as an appetizer with meals when slightly sprouted and salted or when fried and salted." (Meyer.)

44203 to 44238—Continued.

44214. "(No. 2342a.) *Hei tou*, meaning 'green bean.' A small, shining, black soy bean, generally used, when boiled, as a food for hard-working horses, mules, donkeys, and oxen, mixed with chopped straw and kaoliang grains." (Meyer.)

44215 to 44217. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"From Malanyu, Chihli Province, China, November 25, 1916. *Yün tou*, meaning 'fragrant bean.' Garden beans eaten mostly when green, as a vegetable." (Meyer.)

Selections made from No. 2343a.

44215. Bluish black.

44216. Pure white mixed with ivory white.

44217. Maroon mixed with gray.

44218 to 44221. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"From Malanyu, Chihli Province, China, November 25, 1916."

44218. "(No. 2344a.) *No ling tan Chiang tou*, meaning 'wren's egg precious bean.' A speckled variety of cowpea with white top. Cowpeas are in great favor with the Chinese as a human food; they are eaten boiled with rice, stewed in meat dishes, and cooked in soups; they are believed to promote speedy excretions of waste in the body." (Meyer.)

44219. "(No. 2345a.) *Hung Chiang tou*, meaning 'red precious bean.' A small brown variety of cowpea." (Meyer.)

44220. "(No. 2346a.) *Hei yen pai Chiang tou*, meaning 'black-eyed white precious bean.' A small, wrinkled, white cowpea, with black hilum." (Meyer.)

44221. "(No. 2347a.) *Hung yen pai Chiang tou*, meaning 'red-eyed white precious bean.' A small, wrinkled, white cowpea with reddish hilum." (Meyer.)

"A brown-eyed variety of cowpea, quite similar to S. P. I. No. 34103, which seems fairly promising as a table variety." (C. V. Piper.)

44222 to 44226. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a, which was a mixed lot of seeds.

44222. "Apparently ordinary green mung. Seed much like S. P. I. No. 17289, which was grown from seed received from China." (C. V. Piper.)

44223. "Green mung. Seeds rather shiny, much the same as S. P. I. No. 28053 from Manchuria and F. C. I. 01896, a green mung selected from No. 31806, which is a field pea received from Chinese Turkestan." (C. V. Piper.)

44224. "Brown mung, much like S. P. I. No. 13395. *Newman* bean." (C. V. Piper.)

44225. "Seeds green to brownish, densely speckled with black, giving a black appearance to the seed. We have never had seed exactly like this, but S. P. I. No. 16323 is somewhat similar." (C. V. Piper.)

44226. "Apparently the same as S. P. I. No. 44225, but seeds dull, the dullness due to crenulation." (C. V. Piper.)

44203 to 44238—Continued.

44227 and 44228. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceae. **Adsuki bean.**

"From Malanyu, Chihli Province, China, November 25, 1916."

Selected from No. 2347a.

44227. "An adsuki bean, greenish buff to brown, speckled and mottled with black, similar to S. P. I. No. 25141; received from Soochow, China." (C. V. Piper.)

44228. "Seed greenish, straw or buff color, similar to S. P. I. No. 19185; received from China." (C. V. Piper.)

44229 and 44230. *VIGNA SINENSIS* (Torner) Savi. Fabaceae. **Cowpea.**

"From Malanyu, Chihli Province, China, November 25, 1916."

44229. Selected from 2347a. "Red and white variety. Seed appears identical with that of S. P. I. No. 36078." (C. V. Piper.)

44230. "No. 2348a. *Hua yao chaing tou*, meaning 'flower kidney precious bean.' A large variety of cowpea, of reddish brown color with white tip." (C. V. Piper.)

44231. *PISUM SATIVUM* L. Fabaceae. **Pea.**

"(No. 2349a. Malanyu, Chihli Province, China, November 25, 1916.) *Wan tou*, meaning 'ten thousand beans.' A small white garden pea, cultivated for human consumption. In winter these peas are often forced in hot, dark, moist rooms and the sprouts eaten scalded." (Meyer.)

44232. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceae.

Adsuki bean.

"(No. 2350a. Malanyu, Chihli Province, China, November 25, 1916.) *Hei hsiao tou*, meaning 'black small bean.' An adsuki bean of marble-blackish color, used mostly to produce first quality bean sprouts." (Meyer.)

44233. *JUGLANS MANDSHURICA* Maxim. Juglandaceae.

Manchurian walnut.

"(No. 2351a. Shinglungshan, Chihli Province, China, December 3, 1916.) *Shan ho tao*, meaning 'mountain or wild walnut.' A wild walnut, occurring in Manchuria and northern China, growing into a stately tree. The nuts are small and contain but little meat, but they are eagerly eaten by the people. The young foliage is very sensitive to frosts and the trees can be grown successfully only in localities where late frosts are of rare occurrence. Of value as a hardy shade tree; possibly also as a stock for Persian walnuts in cold localities." (Meyer.)

44234. *JUNIPERUS CHINENSIS* L. Pinaceae.

Juniper.

"(No. 2352a. Peking, China, December 27, 1916.) *Pai shu*. Berries of the North Chinese juniper, a hardy, drought and alkali resistant evergreen tree, living to be many centuries old. Especially suited for dry climates with winters not too severe." (Meyer.)

44235 to 44237. *PYRUS USSURIENSIS* Maxim. Malaceae.

Pear.

44235. "(No. 2356a. Tsunhwachow, Chihli Province, China, December 10, 1916.) *Kuan li*, meaning 'bushy pear.' Seeds obtained from fresh fruits. A small pear, of greenish rusty color, of flattened apple shape; calyx persistent, peduncle short. Flesh becoming melting in early winter, of pleasant tart flavor, and possessing aroma. Comes close to the *Pa li hsiang li* and the *Ta tsü hsiang li*

44203 to 44238—Continued.

[S. P. I. No. 44150] Might possibly prove to be immune to fire-blight." (*Meyer.*)

44236. "(No. 2357a. Shinglungshan, Chihli Province, China, December 3 and 4, 1916.) Collected from wild trees which often reach great size, especially in the rich valleys where the trees are now being destroyed to make room for settlers. The bark is of a blackish gray color and characteristically grooved. Branches on young trees are often quite spiny. The fruits are said to ripen early in September, and as there are many rodents about they are soon carried away. To obtain a sufficient supply, one has to be on the spot when these fruits fall." (*Meyer.*)

44237. "(No. 2358a. Chiupatzeling, Shinglungshan district, Chihli Province, China. December 5, 1916.) Collected from wild trees. See Nos. 2356a and 2357a [S. P. I. Nos. 44235 and 44236] for further description." (*Meyer.*)

44238. *QUERCUS* spp. Fagaceæ.

"(No. 2359a. Shinglungshan, Chihli Province, China, December 3, 1916.) Various species of oaks mixed, among which species possibly exist that have not been introduced as yet to western horticulture." (*Meyer.*)

44239. *GARCINIA MULTIFLORA* Champ. Clusiaceæ.

From Kiayingchow, via Swatow, China. Presented by Miss Louise Campbell. Received March 7, 1917.

A shrub, native of southern China, with ovate leaves 3 to 3½ inches long, and perfect flowers in short terminal corymbs, appearing in the heat of summer. (Adapted from *Bentham, Flora Hongkongensis*, p. 25.)

"In a conversation with me on January 8, 1913, Mr. George Campbell, of Kiayingchow, described this fruit and the circumstances connected with its discovery by him as follows:

"In October I was at Pine Mouth. It was the time of the autumn festival and there was a large crowd there. I wandered down a side street and saw a Chinese woman sitting down with a basket before her containing a fruit I had never seen before. It looked something like a guava, but it was symmetrical, round, and green in color, and I was sure it was not a guava. I got two or three of them, asked the woman about them, but all she knew was that they grew wild on the mountains. I took them to the boat and opened them. They were the size of a walnut with the husk on and made me think of a walnut. Upon opening one of the fruits, there was a layer as thick as your finger clear around, which could not be eaten—bitter pulp. Inside there was a nucleus of whitish, almost transparent flesh. There were three perfect seeds in the fruit, I think smaller than a persimmon seed. The inner pulp was very sweet, and the sweetness was that of a mangosteen, very pleasant. The Chinese have a name for this fruit, but it is entirely inappropriate. This fall I had it in mind, and while at Pine Mouth, inquired about the fruit. The people said there was no such thing, but I satisfied myself that some of them did know of the plant. I left some money with a doctor in Pine Mouth, Dr. Chang, and asked him to get some of the fruits for me, if possible, but shortly after this I was obliged to come to America with my wife, so have heard nothing of it. I did, however, ask the doctor to get the fruits, if possible, and send them to

my daughter at Kiaying. I think that very few of these fruits come to the market and that there are very few trees, but I think by searching one could find a tree of the fruit.'

"Introduced as a possible stock for the less-hardy mangosteen. This shrub has stood several degrees of frost in the mountains of northern Kwangtung, where it is native." (*Fairchild.*)

44240. *BAMBOS TULDA* Roxb. Poaceæ.

Bamboo.

From Dehra Dun, India. Presented by Mr. R. S. Hole, forest botanist, Forest Research Institute and College, at the request of the economic botanist, Poona. Numbered March 14, 1917.

An evergreen or deciduous tree bamboo, common in Bengal, India, with green or gray-green culms 20 to 70 feet high and 2 to 4 inches in diameter, and branches from nearly all the nodes. (Adapted from *J. S. Gamble, Bambuseæ of British India*, p. 30.)

This bamboo is said to furnish the so-called "Calcutta cane," used for the finest quality of split-bamboo fishing rods.

See S. P. I. No. 40886 for further description.

For an illustration of a clump of Calcutta bamboos in Panama, see Plate V.

44241 and 44242.

From Augusta, Ga. Presented by Mr. R. C. Berckmans. Received February 26, 1917.

44241. *CUDRANIA TRICUSPIDATA* (Carr.) Bureau. Moraceæ. **Cudrania.**
(*Maclura tricuspidata* Carr.)

"This tree is very easily propagated from suckers. The tree that we have in our nursery is about 12 feet high and about 6 feet broad. It would have been considerably larger than this but for the fact that some four years ago we headed it back to about 3½ feet from the ground. This tree had at least 1½ bushels of fruit which had been matured from the middle of August up to the present time (November), and the specimens that it bore would run into the thousands. It is most prolific, and the fruit matures on the limbs like bunches of onions." (*Berckmans.*)

A compact, somewhat spiny, Chinese bush, with light-green leaves varying from three lobed to ovate in outline, which are used for feeding silkworms. The silk produced by silkworms fed on these leaves is employed in making lute strings, which give clearer tones than those made from ordinary silk. The tree is said to afford a reddish yellow dye called the *chê* yellow, used in dyeing the imperial garments. (Adapted from *Gardeners' Chronicle*, vol. 24, p. 410.)

44242. *PHELLODENDRON SACHALINENSE* Sarg. Rutaceæ.

A rapid-growing tree, native of Saghalin, Chosen, western China, and northern Japan. It ascends to a height of 50 feet, forming a broad crown, and the dark-brown thin bark is not corky. The dull-green compound leaves are 3 to 5 inches long, and the black fruits, one-third of an inch in diameter, occur in broad panicles. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2578.)



A CLUMP OF THE TULDA BAMBOO IN PANAMA (*BAMBOS TULDA*, S. P. I. No. 44240).

A Wardian case filled with plants of this species of bamboo was sent to Washington in the spring of 1907 from Sibpur, near Calcutta, India, by Maj. A. T. Gage, superintendent of the Royal Botanic Garden there. Two years later plants were sent to Panama and central Florida, and some of these have grown into beautiful clumps; there is one at Mr. Nehrling's place near Gotha, Fla., and this clump in the Canal Zone. Later, thousands of seedlings from imported seeds were distributed. This species is ranked as one of the most useful plants of Bengal. Its culms are imported to America and used in the making of split bamboo fishing rods. (Photographed at Culebra, Canal Zone, 1917.)



THE NIPA PALM IN FRUIT (*NYPA FRUTICANS*, S. P. I. No. 44405).

Along the low lands near the coast of the Malay Archipelago this stemless palm, covering vast areas, raises its superb long leaves, like giant fern fronds, above the swamps. It deserves to be naturalized wherever it will grow, not only for its beauty, but for its possibilities as an alcohol-producing plant and for its leaves, from which beautiful floor mats are made. (Photographed by P. L. Bryant, of the Far Eastern Review, August, 1915; P25002FS.)

44243. INODES EXUL O. F. Cook. Phœnicaceæ. Palmetto.

From Victoria, Tex. Presented by Mrs. Martin O'Connor. Received March 9, 1917.

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from O. F. Cook, *Bureau of Plant Industry Circular 113*, pp. 11-14.)

"These have been through several freezes." (O'Connor.)

See also S. P. I. No. 35116 for further description.

44244. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Dindigul, South India. Presented by Rev. Willis P. Elwood, American Madura Mission. Received March 9, 1917.

"Seeds of sugar or custard-apple. Some of it I saved myself, but a greater part came from other places where the fruit was said to be superior." (Elwood.)

44245. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Cristobal, Canal Zone. Presented by Mr. O. W. Barrett. Received March 14, 1917.

"Seeds from ripe fruits of the so-called bush (i. e., jungle) variety which bears more or less wrinkled berries of 15 to 25 mm. in diameter; the plant is very loosely branched, 50 to 75 cm. or more high, and it appears to resist the *Bacillus solanacearum* very well." (Barrett.)

44246. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Charles City, Iowa. Scions presented by Mr. Charles G. Patten. Received March 6, 1917.

"In Grundy Center, Iowa, there is a pear tree growing which endured the extremely cold winters of 1883, 1884, and 1885. This pear is owned by Mr. O. A. Bardhall, a tailor, and was imported from China as a Chinese sand pear by John S. Collins & Sons, of New Jersey, and was supposed by them to bear pears nearly the size of Flemish Beauty, but only of cooking quality. The extreme hardiness of the tree appealed to Mr. Charles G. Patten, of Charles City, Iowa, who planted one in his orchard in 1885, and the following year planted two in an isolated orchard on his farm. The second year after that the tree bore fruit, but on account of its early blooming and consequent lack of pollination bore only a very scanty number of very small, green-colored, hard pears, from which but few seeds were saved. There are in Charles City some 200 seedling pear trees, products of crosses of the Longworth, Seckel, and Chinese sand varieties." (Adapted from Charles G. Patten, in *Report of the Iowa State Horticultural Society for the Year 1912*, p. 162.)

44247 to 44249.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44247. ALLIUM FISTULOSUM L. Liliaceæ. Leek.

"(No. 137b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta Fou ts'ung*, meaning 'large-headed leek.' One specimen of a peculiar, short variety of winter leek." (Meyer.)

44247 to 44249—Continued.**44248. ALLIUM SATIVUM L. Liliaceæ.****Garlic.**

“(No. 138b. Ansuhsien, Chihli Province, China, January 18, 1917.) *Suan*. Bulbs of the first-quality Chinese garlic, extensively used by the people raw, boiled, and pickled as health promoters. They are said to prevent ptomaine poisoning through the action of the strong antiseptic oil they contain. These bulbs sell locally at two for 1 cent (Mex.)” (Meyer.)

44249. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Mala-
(Cydonia cathayensis Hemsl.) [ceæ. Chinese quince.

“(No. 139b. Peking, China, January 27, 1917.) *Mu kwa*, meaning ‘wooden gourd,’ the shape suggesting to the Chinese a gourd. The Chinese quince is much used in winter as a room perfumer by the better class of Chinese. These fruits are said to have come from Anhwei Province. Plants raised from the seeds should be tested as a stock for pears and loquats. Experiments might be made also concerning its susceptibility to blight.” (Meyer.)

44250. MYRIANTHUS ARBOREUS Beauv. Moraceæ.

From Loanda, Angola, Africa. Presented by Mr. J. Gossweiler. Received March 6, 1917.

A tree, native of tropical Africa, with large entire or three to five lobed leaves with prominent stipules. The male flowers are borne on thick, branching receptacles, and the female flowers appear in solitary headlike inflorescences. The fleshy fruits are edible. (Adapted from A. Engler, *Die Pflanzenwelt Ost-Africas*, part C, p. 162.)

44251 and 44252.

From Bogota, Colombia. Presented by Mr. George E. Child. Received March 12, 1917.

44251. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

“It is always worth while to test new strains of the cherimoya, particularly when they are obtained from high altitudes, as this one appears to be. The aim of subtropical horticulturists at the present time is to secure a variety which will be reasonably hardy and prolific in bearing, with a fruit of good quality. To this end we need to plant seed from all parts of tropical America where the cherimoya is grown.” (Popenoe.)

44252. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.****(P. gratissima Gaertn. f.)**

“The avocados of Colombia are scarcely known in the United States. A few fruits of the West Indian race have reached the markets of New York from Colombian ports, but we know very little regarding the races or varieties of the highlands. Some very remarkable young seedlings have been grown in Florida from seed of Colombian origin. It is possible that we shall obtain from that country new races or varieties of considerable value.” (Popenoe.)

44253 to 44266. AMYGDALUS spp. Amygdalaceæ.**Peach.**

From China. Procured from Mr. Thomas Sammons, American consul general, Shanghai. Received March 12, 1917.

“Seeds procured in the region of Kiangyin, Kiangsu Province, by the agent of the Rev. Lacy L. Little. The following directions for the planting and

care of peach trees were furnished by a native peach grower who is thoroughly conversant with the native methods of peach culture.

"The seeds must first be soaked in water and kept therein until the water becomes stale. They should then be taken out and planted, covering them with a thin coating of earth. They should be kept moist with a mixture of wine dregs and water until they sprout. Should worms be discovered in the fruit, the earth should be drawn away from the tree where it emerges from the ground and an old straw sandal (one that has been worn), having been first soaked in urine, should be wrapped around the part of the tree from which the earth has been removed. After this it should be fertilized at intervals with household excrement." (*Sammons.*)

44253 to 44265. *AMYGDALUS PERSICA* L.

(*Prunus persica* Stokes.)

44253. "*Autumn half-pound peach.* Ripens in the autumn. Round and unusually large. Sometimes weighs more than a half pound. White, freestone. Exceedingly fine flavor. Should be carefully looked after." (*Native peach grower.*)

44254. "*Shiny gray peach.* Ripens in August. Oblong in shape; color reddish purple. Flavor sweet, with slight acid taste." (*Native peach grower.*)

44255. "*Nanking red peach.* Ripens about the middle of May. Round and pointed; color reddish white. Flavor sweet, slightly acid. Has a great reputation at Soochow, in Kiangsu Province." (*Native peach grower.*)

44256. "*Watery honey peach.* This peach was first planted in Shanghai, in the Lushang Gardens, in the Da Ts'ing dynasty, in the years known as Ien Fong and Dong Z. Although these gardens are no longer in existence, the seeds of this peach are still to be found along the Yangtse River. It has a peculiarly fine flavor." (*Native peach grower.*)

44257. "*Large fuzzy peach.* Ripens the last of August. Round in shape. Color green; has a fuzzy skin. Wait until it is fully ripe before gathering." (*Native peach grower.*)

44258. "*June red peach.* Ripens in June. Round; color whitish green; skin is unusually thick. Excellent flavor." (*Native peach grower.*)

44259. "*Early summer peach.* Ripens about the middle of July. Shaped somewhat like a pear; color reddish green, flavor sweet." (*Native peach grower.*)

44260. "*Watery white peach.* Ripens about the middle of July. Large and round, pointed somewhat like a pear; color white, surface smooth, flavor fine." (*Native peach grower.*)

44261. "*Shiny plum peach.* Ripens in July and August. Oblong in shape, color purplish green and shiny. Flavor very fine." (*Native peach grower.*)

44262. "*August white peach.* Ripens about the middle of August. Round and pointed. White with greenish tinge. Best flavor when thoroughly ripe." (*Native peach grower.*)

44253 to 44266—Continued.

44263. "*Rainy season* peach. Ripens in the latter part of May (the Chinese rainy season). Round and pointed; slightly red at the point; flavor sweet and good." (*Native peach grower.*)

44264. "*July white* peach. Ripens in the middle of July. Round and pointed; skin soft and thin. Color white with greenish tinge. Flavor delicious." (*Native peach grower.*)

44265. Mixed seed of the foregoing twelve varieties (Nos. 44253 to 44264.)

44266. *AMYGDALUS PERSICA PLATYCARPA* (Decaisne) Ricker.
(*Prunus persica platycarpa* Bailey.)

"Flat peach. Ripens about the middle of August. Round and flat; color greenish white. Fuzz fine and thick." (*Native peach grower.*)

44267 and 44268.

From El Coyolar, Costa Rica. Presented by Mr. Carlos Wercklé. Received March 7, 1917.

44267. *COCCOLOBIS* sp. Polygonaceæ.

A plant allied to the sea grape, or *jarra*, of the West Indies.

44268. *GUILIELMA UTILIS* Oerst. Phœnicaceæ.
(*Bactris utilis* Benth. and Hook.)

Pejibaya palm.

"This palm, commonly called *pejibaya*, grows in the hot humid sections of Costa Rica, more abundantly on the Atlantic slope. The Indians have cultivated it since remote times, and it is not known in the wild state. The trunk reaches a height of 8 meters and is covered with sharp thin spines disposed in circular zones. The leaves are pinnate, dark green in color. The flowers are yellow, very much sought after by insects. They form short racemes protected by a bristled spathe. The fruits reach the size of a small peach and in the larger number of varieties are red, the other sort being yellow. The seed is inclosed in a sweet farinaceous pulp that is cooked and eaten. It has a flavor much like that of the chestnut and is a favorite food of the town people. The wood is very hard and is used by the Indians for walking sticks, arrow points, bows, pikes, and for all purposes where strength and durability are required. The name *pejibaya* is probably South American with the variations *pejiballe*, *pjibay*, *pixbac*, *pixbay*." (C. B. Doyle.)

44269 to 44272.

From Curacao, Dutch West Indies. Seeds collected by Mr. H. M. Curran. Received March 16, 1917.

44269. *CEPHALOCEREUS LANUGINOSUS* (L.) Britt. and Rose. Cactaceæ.

Cactus.

"Edible fruit. March 1, 1917." (Curran.)

44270. *COCCOLOBIS DIVERSIFOLIA* Jacq. Polygonaceæ.

"*Kamalia*. Edible fruit. March 6, 1917." (Curran.)

A West Indian tree 2 to 10 meters in height, with ovate leaves 7 to 14 cm. long, spicate inflorescences of green flowers, and ovoid, brown fruits about 1 cm. long containing round, brownish green seeds. (Adapted from Engler, *Botanische Jahrbücher*, vol. 13, p. 149, as *Coccoloba barbadensis*.)

44269 to 44272—Continued.

44271. *IPOMOEA* sp. Convolvulaceæ.

An ornamental vine allied to our morning-glory.

44272. *SESBAN* sp. Fabaceæ.

"Perennial leguminous plant in low lands, March 6, 1917." (*Curran.*)

44273. *PSYCHOTRIA BACTERIOPHILA* Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by the director, Jardin Botanique, Received March 19, 1917.

See S. P. I. No. 44119 for previous introduction and description.

For notes on the interesting phenomenon of bacterial leaf nodules in Rubiaceous plants, see S. P. I. No. 44295.

44274 to 44288.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 19, 1917.

44274 and 44275. *PYRUS* spp. Maxim. Malaceæ.

Pear.

44274. *PYRUS USSURIENSIS* Maxim.

"(No. 2360a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Ta suan li*, meaning 'big sour pear.'" (*Meyer.*)

Scions received under No. 1272 [S. P. I. No. 44169], which see for description.

44275. *PYRUS USSURIENSIS* Maxim.

"(No. 2361a. Tsunhwachow, Chihli Province, China, December 9, 1916.) *Hung hua kuan li*, meaning 'red-flowered pear.' A small variety of pear, of round, flattened shape with very long peduncle (twice the diameter of the fruit). Calyx persistent; color on top dull red, at base greenish yellow. Flesh of watery sweet taste, becoming soft later on. Probably a hybrid and possibly immune to fire-blight." (*Meyer.*)

44276. *PYRUS* sp.

"(No. 2362a. Peking, China, November 4, 1916.) *T'ou li*, meaning 'joining pear,' which name also is given to *Pyrus betulacolia*, in which case it has reference to the fact that this last one is used extensively as a joining (i. e., grafting) stock. This number, however, is quite a different pear and may prove to be a new species. A small pear, the size of a crab apple, of russet color, with a very long peduncle and a deciduous calyx. Flesh soon becoming soft and mealy and decaying quickly." (*Meyer.*)

44277. *PYRUS* sp.

"(No. 2363a. Peking, China, December 15, 1916.) *Shui pai li*, meaning 'water white pear.' A variety of Chinese pear of yellow color; medium size; of round-oval shape; peduncle medium long; calyx persistent. Meat firm and sweet, but a trifle coarse. A rare variety." (*Meyer.*)

44278. *PYRUS USSURIENSIS* Maxim.

"(No. 2364a. Peking, China, December 19, 1916.) The well-known white pear, or 'Pai li,' which is among the pears most appreciated by foreign residents in North China. The fruits are of apple shape, of pale

44274 to 44288—Continued.

waxy-yellow color, and the flesh of a fresh, sweet taste after they have become soft. Some of the fruits have persistent calyxes, while others have deciduous ones." (Meyer.)

Received as *Pyrus simonii*, which is now referred to the above species by Mr. Rehder.

44279. *PYRUS LINDLEYI* Rehder.

(*P. sinensis* Lindl.)

"(No. 2365a. Malanyu, Chihli Province, China, November 25, 1916.) *P'in li*, meaning 'apple pear.' A variety of pear of russet-brown color and of flat, apple shape, though some specimens are of elongated form and taper down toward the base; calyx deciduous; peduncle medium long; flesh firm and juicy, but not sweet. A long-time keeper and a good shipper; can be used by occidentals as a cooking pear." (Meyer.)

44280. *PYRUS* spp.

"(No. 2366a. North China, November and December, 1916.) Mixed varieties of cultivated pears; to be tested as regards degree of immunity to pear-blight." (Meyer.)

44281 to 44283. *MALUS* spp. Malaceæ.

44281. *MALUS SPECTABILIS* (Ait.) Borkh. Flowering crab apple.
(*Pyrus spectabilis* Ait.)

"(No. 2367a. Peking, China, November 3, 1916.) *Hai tan kuo*, meaning 'sea red fruit,' implying that the plant came to North China by the sea route, probably from central China. A flowering crab apple, resistant to the drought and alkali of North Chinese soils. The small, greenish white fruits, which are of no value, have a persistent calyx. To be sown in order to obtain new types." (Meyer.)

44282. *MALUS* sp.

Apple.

"(No. 2368a. Peking, China, December 15, 1916.) *Ch'iu kuo*, meaning 'autumn fruit.' A small Chinese apple, of very dark-red color with bluish bloom. Calyx persistent; peduncle medium long; contains but few seeds. Flesh mealy and without flavor. Withstands dry air and a fair amount of alkali in soil and water." (Meyer.)

44283. *MALUS BACCATA* (L.) Moench.

Crab apple.

(*Pyrus baccata* L.)

"(No. 2369a. Peking, China, December 15, 1916.) *Hai tan kuo*, meaning 'sea red fruit.' A medium-sized crab apple, of bright-red color and of pleasant, sour taste. Calyx deciduous; peduncle medium long. Much used in North China as a preserve. This variety seems to be able to stand considerable drought and alkali and may be of value in breeding experiments in the upper Mississippi Valley." (Meyer.)

44284. *NICOTIANA TABACUM* L. Solanaceæ.

Tobacco.

"(No. 2370a. Malanyu, Chihli Province, China, November 27, 1916.) *Yen*. A variety of tobacco considered locally to be very good. To be tested for nicotine content." (Meyer.)

44285. *INDIGOFERA KIRILOVII* Maxim. Fabaceæ.

"(No. 2371a. Shinglungshan, Chihli Province, China, December 3, 1916.) A low-growing leguminous shrub, with pretty rose-colored flowers; occurring on decomposed rocky mountain slopes, often in partial shade. Fit to be employed as a rockery shrub." (Meyer.)

44274 to 44288—Continued.**44286. ULMUS PARVIFOLIA** Jacq. Ulmaceæ.

Elm.

"(No. 2372a. Near Shih-taoyin, Chihli Province, China, December 1, 1916.) An autumn-flowering elm, found in a locality farther north than one generally meets with this species." (*Meyer.*)

44287. CHRYSANTHEMUM INDICUM L. Asteraceæ.

Chrysanthemum.

"(No. 2373a. Malanyu, Chihli Province, China, November 30, 1916.) A wild, perennial chrysanthemum, producing masses of small, golden-yellow flowers late in the fall. The plant is well worth growing on dry banks and in large rockeries; it requires partial shade to do best. Deserves to be naturalized in a locality like Colorado Springs." (*Meyer.*)

44288. SPODIOPOGON SIBIRICUS Trin. Poaceæ.

Grass.

"(No. 2374a. Shinglungshan, Chihli Province, China, December 3, 1916.) A perennial grass, 2 to 3 feet high, occurring on mountain slopes on decomposed porphyritic rock in partial shade. Possibly of forage value in Rocky Mountain localities." (*Meyer.*)

44289. THUNBERGIA GIBSONI S. Moore. Acanthaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received March 19, 1917.

An ornamental climbing shrub native to tropical East Africa. It flowers profusely, the corolla being of clear or deep-orange color and having a waxy texture. The plant is said to grow well under ordinary greenhouse conditions. (Adapted from *Gardeners' Chronicle*, May 1, 1915.)

"Seeds of a plant often discussed in the *Gardeners' Chronicle*, but never brought into commerce. It is doubtless the finest species of the genus." (*Buysman.*)

44290. MANGIFERA CAESIA Jack. Anacardiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received March 19, 1917.

Binjai. A large, stately tree, native of the Malay Archipelago, with alternate wedge-shaped or elliptic leathery leaves 6 to 16 inches long; stout, much-branched panicles of purplish flowers, and oblong or ovoid fruits, which are eaten by the natives but are said to be very poor. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, pp. 1894-1895.)

44291 to 44294.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 6, 1917.

44291. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2375a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pan ch'ing pan*, *pan pai ts'ai*, meaning 'half green, half white pai ts'ai,' on account of the outer leaves being green while the center is white. A fine quality of heavy winter *pai ts'ai*, coming from a locality famous for its cabbage and formerly supplying the Imperial Court at Peking. This *pai ts'ai* has a sweet, wholesome flavor, is quite juicy, but not watery, like most other varieties. After having been boiled once it can be warmed up again three successive days without losing its fine taste. The plants are transplanted three times before being put out in their permanent places. They need a rich porous soil and plenty of water while growing fast. In good seasons specimens are obtained that weigh between 30 and 40 pounds apiece." (*Meyer.*)

44291 to 44294—Continued.

44292. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

"(No. 2376a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Pai ts'ai*, meaning 'white vegetable.' A heavy quality of white winter *pai ts'ai*, much in demand and generally disposed of by the growers to private customers before the end of December. Needs a rich soil and no lack of moisture to become tender and sweet." (Meyer.)

44293. *RAPHANUS SATIVUS* L. Brassicaceæ. **Radish.**

"(No. 2377a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Teng lung hung lo po*, meaning 'lantern red root,' referring to the resemblance of the root to a Chinese or Japanese flat lantern. A large, flat red, winter radish, said to grow as heavy as 5 catties apiece. Needs rich, well-drained soil to do well. Sow out in summer, not in spring." (Meyer.)

44294. *ALLIUM FISTULOSUM* L. Liliaceæ. **Leek.**

"(No. 2378a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou st'ung*, meaning 'large-headed leek.' A peculiar variety of Chinese winter leek of very short growth, looking almost like a slender onion. Said to be of very good flavor; possesses also good shipping and keeping qualities. Does best in light, rich, moisture-retaining soil." (Meyer.)

44295. *PAVETTA ZIMMERMANNIANA* Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received March 19, 1917.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small slender-tubed white flowers.

"The remarkable researches of Zimmerman and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Myco-bacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and when the seed germinates grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules.

"Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the fact that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitro-

gen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these trees, and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators; and it may be possible to find suitable small shrubs of *Pavetta* or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semitropics or wherever else the climate will permit their cultivation." (*David Fairchild.*)

44296 to 44311.¹ PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Yokohama, Japan. Scions purchased from the Yokohama Nursery Co. Received February 27, 1917.

44296. *Kirin*; late flowering, with large, very double, rose-colored flowers; one of the best. Considered by Wilson a form of *Prunus serrulata sachalinensis* and by Miyoshi forma *atrorubra* of *P. serrulata*.

44297. *Taki-nioi*; very fragrant, single, white flowers; called by Miyoshi forma *cataracta* of *Prunus serrulata* and by Wilson forma *cataracta* of *P. lannesiana*.

44298. *Shōgetsu*; a rather late, good variety with very large, long-pediciled, double, pale-pink flowers; called by Wilson forma *superba* of *Prunus serrulata sachalinensis* and by Miyoshi the same form of *P. serrulata*.

44299. *Kan-zakura*; a curious Japanese cherry from the vicinity of Tokyo, with single, pale-pink flowers which appear in late winter. It is now being cultivated in the Arnold Arboretum. (Adapted from Wilson, *The Cherries of Japan*, p. 31, as *P. serrulata*, var. *spontanea*, forma *praecoæ*.)

44300. *Minakami*; flowers very fragrant, white, single or nearly so; placed by Wilson under forma *donarium* of *Prunus lannesiana* and by Miyoshi under forma *glauca* of *P. serrulata*.

44301. *Kokonye*; flowers pink, double or semidouble, long pediceled and usually short peduncled. Considered by Wilson forma *homogena* of *Prunus serrulata sachalinensis*, while Miyoshi considered it a form of *P. serrulata*.

44302. *Ranzan*; a very pleasing form with single pink flowers on long slender pedicels. Considered by Wilson a form of *Prunus lannesiana*.

44303. *Yae-akebono*; flowers very large, fragrant, semidouble, soft pink, very beautiful; called by Wilson forma *versicolor* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata*.

44304. *Gyciko*; semidouble flowers, pale yellow with greenish stripes, three flowered; considered by Wilson a form of *Prunus lannesiana* and by Miyoshi as forma *tricolor* of *P. serrulata*.

44305. *Horinji*; a small tree with dark-gray twigs, yellowish brown young leaves, and flowers with roundish petals, the outer rank pink, the inner rank white. Blossoming time from the middle to the end of April. (Adapted from Miyoshi, "*Japanische Bergkirschen*," *Journal of*

¹ See footnote, p. 11.

44296 to 44311—Continued.

the College of Science, Tokyo, vol. 34, art. 1, p. 110, as *Prunus serrulata* Lindl. forma *decora*.)

"This is a very beautiful form, with clusters of pale pink double or semidouble flowers." (Wilson, *The Cherries of Japan*, p. 40, as *Prunus serrulata*, var. *sachalinensis* forma *horinji*.)

44306. *Hitoye-fudanzakura*; a precocious form, which blooms in almost any season; single flowers, white or nearly so, of little horticultural value; considered by Wilson a form of *Prunus lannesiana*.

44307. *Asagi*. A Japanese cherry from Kohoku, with greenish white flowers tinged with pink, about 4 cm. in width, occurring in two to four flowered clusters. (Adapted from Miyoshi, "*Japanische Bergkirschen*," *Journal of the College of Science, Imperial University of Tokyo*, vol. 34, pp. 124-125.)

Called by Miyoshi, *Prunus serrulata*, subforma *luteoides* Miyoshi.

Received as *Asagi-zakura*, but no mention of this name is made in the above publication or in Wilson, *The Cherries of Japan*.

44308. *Botan-zakura*; one of the very best forms bearing very large, pale-pink, fragrant, semidouble flowers, called by Wilson forma *moutan* of *Prunus lannesiana* and by Miyoshi the same form of *P. serrulata*.

44309. *Surugadai-nioi*. A moderately large tree with brown-gray twigs, brownish red young leaves, and white, fragrant flowers. Blossoming time about the end of April. (Adapted from Miyoshi, "*Japanische Bergkirschen*," *Journal of the College of Science, Tokyo*, vol. 34, art. 1, p. 132, as *Prunus serrulata* Lindl. forma *surugadai-odora*.)

"Flowers semidouble, fragrant, nearly white, pendulous on long slender pedicels. This is a late-flowering form." (Wilson, *The Cherries of Japan*, p. 51, as *Prunus lannesiana* forma *surugadai-odora*.)

44310. *Shirayuki*. A moderately large tree with numerous closely crowded erect-spreading branches, smooth brown-gray twigs, yellowish brown young leaves, and white flowers with hairy penduncles. Blossoming time mid-April. (Adapted from Miyoshi, "*Japanische Bergkirschen*," *Journal of the College of Science, Tokyo*, vol. 34, art. 1, p. 127, as *Prunus serrulata* Lindl. forma *nivea*.)

"With its large flowers, this distinct form resembles *Prunus yedoensis* Matsumura, but the bracteoles show that it belongs to *P. serrulata* Lindl. . . . The branches are erect spreading and the flowers white, single or nearly so." (Wilson, *The Cherries of Japan*, p. 34, as *P. serrulata* var. *pubescens* forma *shirayuki*.)

44311. *Udzu-zakura*; a good form; produces near ends of branches pink, double flowers, with short peduncles and long pedicels. Called by Miyoshi forma *spiralis* of *Prunus serrulata* and by Wilson the same form of *P. serrulata sachalinensis*.

44312 to 44318.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received March 20, 1917.

44312. *BRASSICA PEKINENSIS* (LOUR.) Gagn. Brassicaceæ. Pai ts'ai.

"(No. 2379a. Peking, China, February 5, 1917.) A medium-large, very solid, white, winter *pai ts'ai*, possessing excellent keeping qualities. Needs rich, friable soil to thrive well." (Meyer.)

44312 to 44318—Continued.

44313 to 44315. *ALLIUM FISTULOSUM* L. Liliaceæ.

Leek.

44313. "(No. 2380a. Peking, China, February 5, 1917.) *Chi t'ui ts'ung*, meaning 'chicken-leg leek.' A short variety of winter leek; very firm and juicy." (Meyer.)

44314. "(No. 2381a. Peking, China, February 5, 1917.) *Kao chio pai ts'ung*, meaning 'tall-horn white leek.' A long, heavy variety of winter leek; a good keeper; stands repeated freezing and thawing." (Meyer.)

44315. "(No. 2382a. Peking, China, February 5, 1917.) *Pai lu ts'ung*, meaning 'frost-festival leek.' A medium long variety of winter leek." (Meyer.)

44316 to 44318. *BRASSICA* spp. Brassicaceæ.

Mustard.

"*Chieh*. Mustard seed, such as is used in Peking to make ground table mustard. It is cultivated a few days' journey to the northwest of Peking in a region with cool nights in summer, a climate resembling that of the intermountain sections of the United States.

44316. "(No. 140b. Peking, China, February 5, 1917.) Price of this sample 28 cents in Yuan silver per catty." (Meyer.)

Received as *Brassica juncea*, but it is apparently not that species.

44317. "(No. 141b. Peking, China, February 10, 1917.) Price of this sample 26 cents in Yuan silver per catty." (Meyer.)

44318. "(No. 143b. Peking, China, February 10, 1917.) Price of this sample 24 cents in Yuan silver per catty." (Meyer.)

44319. *OPUNTIA* sp. Cactaceæ.

Prickly-pear.

From Curacao, Dutch West Indies. Cuttings presented by Mr. H. M. Curran. Received March, 1917.

"Spineless form. March 1, 1917." (Curran.)

44320 to 44325.

From Richmond, Victoria, Australia. Seeds presented by Mr. F. H. Baker. Received March 7, 1917.

44320 to 44323. *ACACIA* spp. Mimosaceæ.

Wattle.

"In sowing acacia seed they should have boiling water poured over them and should be allowed to stand for 24 hours. Do not use any manure, and sow them in the poorest soil." (Baker.)

44320. *ACACIA DIFFUSA* Lindl.

"Prickly acacia; good bloomer." (Baker.)

A straggling shrub, native of New South Wales, Australia, with loosely scattered, sessile, linear leaves about an inch long and yellow flowers in axillary heads about the size of a pea. (Adapted from the *Botanical Register*, vol. 8, pl. 634.)

44321. *ACACIA IMPLEXA* Benth.

"A fine, stately tree." (Baker.)

A tall Australian tree, 50 feet high, with light-green sickle-shaped lanceolate leaves 6 to 7 inches long, cream-colored flowers in short

44320 to 44325—Continued.

racemes, and light-brown pods, curved like an interrogation mark, 4 to 6 inches long. The dark-brown, hard, close-grained wood is much used for turnery and for all purposes which call for tenacity and strength. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 185*, and from *Maiden, Native Useful Plants of Australia, p. 357*.)

44322. ACACIA LEPROSA Sieber.

"A beautiful wattle; always weeping; a good bloomer." (*Baker*.)

An Australian shrub with erect, slender branches; linear or lance-shaped sicklelike leaves covered with very small patches of whitish matter exuded through the epidermis, and pale yellow flowers in clustering heads. The whitish patches on the leaves give the plant a gray, powdery appearance; hence its name. (Adapted from the *Botanical Register, vol. 17, pl. 1441*.)

44323. ACACIA PYCNANTHA Benth.

A small tree, native of southern Australia, with lanceolate or oblong leaves $2\frac{1}{2}$ to 6 inches long and showy, fragrant, yellow flowers in simple or compound racemes. The pods are 2 to 5 inches long. The bark contains the highest percentage of tannin of any of the species; a good gum exudes from the trees; and the tree itself is used as a sand binder. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 184*.)

44324. CANDOLLEA GRAMINIFOLIA (Swartz) F. Muell. Candolleaceæ.
(*Stylidium graminifolium* Swartz.)

A glabrous Australian perennial with a short tufted stem rarely lengthening to 4 or 5 inches and linear, rather rigid, flattened leaves usually 2 but at times 6 to 9 inches long. The scapes are up to $1\frac{1}{2}$ feet high, the upper quarter or half being occupied by a narrow, simple raceme or interrupted spike of pink flowers. The oval capsules are a quarter to half an inch long. (Adapted from *Bentham, Flora Australiensis, vol. 4, p. 10*.)

44325. KENNEDYA MONOPHYLLA Vent. Fabaceæ.
(*Hardenbergia monophylla* Benth.)

A trailing herb, native of southern Australia, with leaves consisting of one ovate or lance-shaped leaflet 2 to 4 inches long, violet flowers nearly half an inch long in few-flowered racemes, and flat papery pods about $1\frac{1}{2}$ inches long. (Adapted from *Bailey, Queensland Flora, pt. 2, p. 424*.)

44326 to 44330. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Kingston, Jamaica. Cuttings presented by Mr. William Harris, Superintendent of Public Gardens. Received March 12, 1917.

"Jamaica seedlings raised at our experiment station." (*Harris*.)

44326. No. 70.

44329. No. 73.

44327. No. 71.

44330. No. 74.

44328. No. 72.

44331 and 44332. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Cienfuegos, Cuba. Cuttings presented by Mr. Robert M. Grey, Harvard Experiment Station. Received March 13, 1917.

44331. *Demerara* 74.

44332. *Demerara* 95.

44333. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

From Hongkong, China. Grafts presented by Mr. W. T. Tutchter, superintendent, Botanical and Forestry Department. Received March 14, 1917.

See S. P. I. No. 43987 for previous introduction and description.

44334. PONCIRUS TRIFOLIATA (L.) Raf. Rutaceæ.

(*Citrus trifoliata* L.)

Trifoliolate orange.

From Taiku, Korea. Sprouts presented by Rev. James E. Adams, Korean Mission. Received March 19, 1917.

A shrub or small tree used extensively as a hedge plant in our Southern States, where it is quite hardy.

44335. ILEX MACROPHYLLA Wall. Aquifoliaceæ.**Holly.**

From Pisa, Italy. Seed presented by the director, Botanic Garden. Received March 23, 1917.

A tree, native of Java and Sumatra, about 15 feet high, with gray bark, rigid, shining leaves 4 to 7 inches long, flowers in branched cymes, and round drupes containing about eight stones. (Adapted from *Hooker, Flora of British India*, vol. 1, pp. 604-605.)

44336. CACARA EROSA (L.) Kuntze. Fabaceæ.**Yam bean.**

(*Pachyrhizus angulatus* Rich.)

From Kingston, Jamaica. Seed presented by Mr. William Harris, Superintendent of Public Gardens. Received March 23, 1917.

A shrubby, climbing, leguminous plant with large edible roots that also produce a valuable starch.

See S. P. I. Nos. 22971 and 33258 for previous introductions.

44337. CUCUMIS MELO L. Cucurbitaceæ.**Melon.**

From Baku, Russia. Seed presented by Mr. Roy G. Pierce, Forest Pathologist, who secured them from Mr. Arthur Knapp. Received March 24, 1917.

"Seeds from a melon called a *danya*, which is grown in the Trans-Caucasus. The melon is yellow and very like the California *cassaba* melon. The remarkable thing about this melon is that if it is hung up in a cool place it will keep for a year." (*Knapp*.)

44338. ANANAS SATIVUS Schult. f. Bromeliaceæ.**Pineapple.**

From Antigua, West Indies. Plants purchased from Mr. J. Jackson, curator and superintendent, Agricultural Department. Received March 15, 1917.

White Antigua pineapple. A medium-sized pineapple. It is light colored, oblong in shape, with a quality better than the average. It is used as a dessert and for general kitchen purposes. (Adapted from *Bulletin No. 8, Division of Pomology, U. S. Department of Agriculture*.)

44339 to 44343.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received March 19, 1917.

44339. BERBERIS sp. Berberidaceæ.

Barberry.

Received as *Berberis vilmoriniana*, for which a place of publication has not yet been found.

See S. P. I. Nos. 33024, 40139, and 42184 for previous introduction.

44340. MALUS NIEDZWETSKYANA Dieck. Malaceæ.

Apple.

A tree, native of southwestern Siberia, resembling the common apple in habit, with reddish tinged young wood and young leaves, large clusters of deep-pink flowers, and dark-red conical apples with purplish flesh. The attractive coloring of the wood, leaves, and fruit makes this an especially ornamental species. (Adapted from *The Garden*, May 22, 1915, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2871, as *Pyrus malus niedzwetskyana*.)

44341. SORBUS KOEHNEANA C. Schneid. Malaceæ.

A shrub, native to central China, up to 4 meters (13 feet) in height, with generally smooth, compound leaves from 8 to 15.5 cm. long; white flowers, usually on the very short lateral branches; and round white fruits, about 7 or 8 mm. in diameter. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, pp. 471-472.)

44342. × SORBUS MEINICHII (Lindeb.) Hedl. Malaceæ.

A hybrid tree, whose parents are *Sorbus aucuparia* and *S. hybrida*. It is a native of the island of Åland and the neighboring islands and has compound, serrate leaves. (Adapted from *Hedlund, Monographie der Gattung Sorbus*, pp. 49-50.)

44343. SORBUS VILMORINI C. Schneid. Malaceæ.

A large shrub or small tree, native of western China, with attractive, pinnate leaves; white flowers about a quarter of an inch in diameter, in corymbs appearing in June; and pale rosy-red fruits. In summer and also in autumn this is a most attractive *Sorbus*. (Adapted from *The Garden*, September 2, 1916.)

44344. ACHRAS ZAPOTA L. Sapotaceæ.

Sapodilla.

(*A. sapota* L.)

From Bokeelia, Fla. Seed presented by Mr. Harry P. Johnson. Received March 24, 1917.

"Seeds of the largest sapodilla fruit I have ever seen; grown on my place here. As large as a big orange." (*Johnson*.)

44345. INODES EXUL O. F. Cook. Phœnicaceæ.

Palmetto.

From San Antonio, Tex. Seed presented by Mr. C. R. Letteer, San Antonio Experiment Farm. Received March 26, 1917.

"Collected at Victoria, Tex., in 1912." (*Letteer*.)

A large palmetto, cultivated in Texas, with deep-green foliage, solitary fruits, and large seeds not wrinkled above. (Adapted from *Circular 113, Bureau of Plant Industry*, pp. 11-14.)

See also S. P. I. No. 35116 for further description.

44346. LUCUMA sp. Sapotaceæ.

From El Coyolar, Costa Rica. Seed presented by Mr. Carlos Wercklé.
Received March 7, 1917.

"Seeds of the apple-shaped *nispero sapotilla*. Better than *Vitellaria multiflora*; flesh of the same consistency and appearance, but more highly colored." (Wercklé.)

44347 to 44356.

From Maidstone, England. Plants presented by George Bunyard & Co., Ltd. Received March 29, 1917. Quoted notes from Bunyard's Catalogue.

44347 to 44349.¹ RIBES VULGARE Lam. Grossulariaceæ. Garden currant.

44347. "Moore's Ruby. Berries medium size. Midseason. Growth very upright; very fertile; a hardy and desirable sort. Raised by Judge Moore, U. S. A."

44348. "Skinner's Early. Berries medium, bright red; bunches long, very fertile; growth vigorous, upright. The earliest of all; most valuable for market. This variety is esteemed in Kent and is named after a local grower, but is quite possibly the old sort renamed."

44349. "Utrecht. Berries medium, dark red; bunches medium; growth vigorous, upright; leaves resembling *Scotch* but distinct. A useful midseason variety, origin probably indicated by its name."

44350 to 44356. CORYLUS AVELLANA L. Betulaceæ. Filbert.

44350. "Cosford. Nut almost round, large, most excellent flavor, and very thin shell. A prolific variety, and recommended as a pollenizer for filberts of less fertile sorts. Possibly originated in Suffolk, where there is a hundred of *Cosford*."

44351. "Duke of Edinburgh. Nut large, oblong; shell rather thick; of excellent flavor; quite one of the best flavored. Raised by Mr. Webb, of Calcot, and certificated by the Royal Horticultural Society in 1883."

44352. "Kentish Cob. Nut large, broad and long, excellent flavor; prolific; the best for all-round use. Almost exclusively grown in Kent for market work. Raised by Mr. Lambert, of Clouthurst, Kent, about 1830; hence its synonym '*Lambert's*' filbert."

44353. "Merveille de Bolwyller. Nut remarkably broad and thick, very handsome and of first-class flavor; vigorous grower. Originated with an amateur in Silesia about 1840 and sold by Messrs. Baumann of Bolwyller."

44354. "Pearson's Prolific. Nut round, short, good flavor; an abundant and early bearer; produces a large number of catkins and is valuable for purposes of cross-fertilization. Introduced by Messrs. Pearson, of Chilwell."

44355. "Prolific. Curiously frizzled husk; nuts small but produced in large clusters, often ten to a bunch; very early, sweet, and good. Originated in a garden at Moreton, Norwich, about 1840. Sometimes called the *Frizzled nut*."

44356. "Red skinned. Resembling the *White* filbert in all respects save the red skin of the kernel. Has been known since 1800."

¹ See footnote, p. 11.

44357 and 44358. ORYZA SATIVA L. Poaceæ. Rice.

From San Jose, Costa Rica. Presented by Mr. J. E. van der Laat, director, Department of Agriculture. Received February 13, 1917.

44357. A variety received without description.

44358. "This is a very prolific rice, but it has degenerated here by neglect." (*Van der Laat.*)

44359 to 44361.

From Cairo, Egypt. Seeds presented by Mr. F. G. Walsingham, horticultural division, Ministry of Agriculture, Gizeh Branch. Received March 10, 1917.

44359. MONTANOA HIBISCIFOLIA (Benth.) C. Koch. Asteraceæ.

Tree daisy.

One of the tree daisies of Central America, which is easily distinguished by its five to seven lobed leaves, which are opposite and entire. It is easily cultivated, the seeds being started indoors and the plants transferred to the open for foliage effects. It may also be propagated by cuttings. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 2064, and from *Koch, Wochenschrift des Vereines zur Beforderung des Gartenbaues*, vol. 7, p. 407.)

44360. SOLANUM sp. Solanaceæ.

Wild potato.

Received as *Solanum rondeletii*, for which a place of publication has not yet been found.

44361. ZIZIPHUS SPINA-CHRISTI (L.) Willd. Rhamnaceæ.

A shrub, native of Palestine and Egypt, 3 to 5 meters high, with whitish, spiny branches, rounded or heart-shaped leaves 2 to 4 cm. long, and roundish, dry, astringent fruits about the size of a hazelnut. As a stock upon which to graft the common jujube this species is not satisfactory, for it has a tendency to sucker. The best use to which this shrub can be put is that of a shade tree for crops. When once established a clump can scarcely be eradicated. (Adapted from *Post, Flora of Syria*, p. 201, and from *Bagnol, in Bulletin de la Société Nationale d'Acclimatation de France*, vol. 44, pp. 153-157.)

44362. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Felton, Del. Cuttings presented by Mr. J. W. Killen. Received March 29, 1917.

"This persimmon has withstood our climate for the past 25 years, though it has been killed back a number of times. It had no protection at all this past winter and does not seem to have been affected by the cold this time. It has borne a number of times. The fruits are seedless and about 2½ to 3 inches in diameter." (*Killen.*)

44363. DIOSPYROS DISCOLOR Willd. Diospyraceæ. Mabolo.

From Manila, Philippine Islands. Cuttings presented by Mr. Adn. Hernandez, Director of Agriculture. Received March 28, 1917.

A common Philippine tree of medium size, 8 to 15 meters high, with dark-green leaves and roundish or somewhat flattened velvety reddish fruits about 7.5 cm. in diameter, containing cream-colored, rather dry, sweet, and aromatic flesh inclosing several large seeds. (Adapted from the *Philippine Agricultural Review*, third quarter, 1916, p. 234.)

44364. MEDICAGO SATIVA L. Fabaceæ.**Alfalfa.**

From Russia. Seed presented by Mr. W. P. Cresson, secretary of embassy in charge of the consulate at Tiflis. Received March 29, 1917.

"An inferior quality from the region of Elisavetpol." (*Cresson.*)

44365. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

From Peru. Seed purchased from Mr. H. P. Archer, Lima. Received March 30, 1917.

"*Palta*, from the Chanchamayo. The months of December and January are the best ones for getting *paltas*." (*Archer.*)

44366 to 44369.

From Bogota, Colombia. Seeds presented by Mr. M. T. Dawe, Agricultural Adviser and Director of Agriculture. Received March 30, 1917.

44366. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.**Tomato.**

"Seeds of the wild variety found in this neighborhood." (*Dawe.*)

44367. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

See S. P. I. No. 44251 for previous introduction and description.

44368. CARICA PAPAYA L. Papayaceæ.**Papaya.**

"In connection with the improvement of the papaya in southern Florida and the development of strains suitable for commercial purposes, it is desirable that varieties be obtained for trial from as many different regions as possible. The papayas of Colombia are of particular interest as coming from a region in which several wild species of *Carica* occur. From such a region there is always the possibility of getting hybrids or distinctly new strains." (*Popenoe.*)

44369. DOLICHOLUS PHASEOLOIDES (Swartz) Kuntze. Fabaceæ.

(*Rhynchosia phaseoloides* DC.)

"*Pionia*, a small deep-red and black seed from a creeping plant. Heaving the seed into water to soften, grinding it afterwards, and straining the paste and mixing it with sirup is said to be effective to cure epilepsy." (*Alcazar.*)

44370. CANNABIS SATIVA L. Moraceæ.**Hemp.**

From Keijo, Chosen. Presented by Mr. Nagashima, of the Government Industrial Model Farm, through Mr. L. H. Dewey, of the Department of Agriculture. Received March 31, 1917.

This number differs somewhat from other so-called Keijo strains, and from the single trial so far given it would seem to be less productive.

44371. CANNABIS SATIVA L. Moraceæ.**Hemp.**

From Seoul, Chosen. Presented by the Yokohama Nursery Co., Yokohama, Japan, who secured it from Mr. Kato, Seoul. Received through Mr. L. H. Dewey, of the Department of Agriculture, March 31, 1917.

A promising strain which produced plants 4.3 meters in height during the only trial so far accorded it.

44372 to 44374. CITRUS spp. Rutaceæ.

From Lamac, Bataan, Philippine Islands. Seeds presented by Mr. P. J. Wester, Lamac Experiment Station, through Mr. Adn. Hernandez, Director of Agriculture, Manila. Received March 31, 1917.

44372 and 44373. CITRUS MEDICA L.**Citron.**

44372. The identification of this number was apparently questioned by Mr. Wester, but it seems to be at least a form of *Citrus medica*.

44373. An unnamed variety received without description.

44374. CITRUS MEDICA ODORATA Wester.*Tihi-tihi.*

See also S. P. I. No. 44139 for further description.

44375 to 44404.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 28, 1917.

44375. ACER HOOKERI Miquel. Aceraceæ.**Maple.**

A tree, 40 to 50 feet high, native of the eastern Himalayas, with green, cordate, entire, finely serrate leaves 3 to 6 inches long, flowers in simple racemes 2 to 4½ inches long, and glabrous samaras with venose wings. (Adapted from *Hooker, Flora of British India, vol. 1, p. 694.*)

44376. AESCULUS GLABRA LEUCODERMIS Sarg. Aesculaceæ.**Horse-chestnut.**

This form is characterized by the smooth, pale, often nearly white bark of the trunk and branches and is found in the southeastern United States. (Adapted from *Kew Bulletin of Miscellaneous Information, Appendix 3, 1914, p. 57.*)

44377. ALNUS SITCHENSIS Sarg. Betulaceæ.**Sitka alder.**

A tree, native of northwestern United States and Alaska, up to 40 feet in height, with a narrow head of short and nearly horizontal branches, ovate, light-green, dentate leaves 3 to 6 inches long, and staminate catkins 4 to 5 inches long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 184.*)

44378. ARALIA CHINENSIS L. Araliaceæ.**Chinese Angelica tree.**

Var. *fastigiata*. A garden variety with the branches more or less parallel with the main trunk.

44379. ARONIA ARBUTIFOLIA (L.) Pers. Malaceæ.*(Pyrus arbutifolia L. f.)*

Var. *grandiflora*. A large-flowered garden variety of a bushy shrub, native of eastern North America. It is from 5 to 10 feet high, with narrowly oval leaves with dark-green upper surfaces and gray velvety lower surfaces. It has white or slightly rosy flowers produced in small corymbs and small, nearly globular red fruits.

44380. BERBERIS SARGENTIANA C. Schneid. Berberidaceæ.**Barberry.**

A black-berried barberry from western Hupeh, China, reaching a height of 2 meters. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum, and for this reason is one of the most desirable of the recent introductions as a garden plant. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 359.*)

44375 to 44404—Continued.

44381. *BERBERIS HOOKERI* Lem. Berberidaceæ.

Barberry.

An evergreen spiny Himalayan shrub 3 to 5 feet in height, with tufted, lanceolate-obovate, dark-green, leathery leaves 1 to 3 inches long with slender teeth on the margins. The pale-yellow flowers are two-thirds of an inch wide, and the black-purple, narrowly cylindrical berries often remain on the plant until the following spring. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 243.)

44382. *BETULA JAPONICA MANDSHURICA* (Regel) Winkl. Betulaceæ.

Birch.

A white-barked tree, native of western China, 10 to 25 meters in height, with very glabrous, regularly dentate leaves. The bark is used for lining straw hats. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 461.)

44383. *CISSUS STRIATA* Ruiz and Pav. Vitaceæ.(*Vitis striata* Miquel.)

A low, shrubby evergreen vine of graceful habit, native of Chile and southern Brazil, with small, three to five foliolate, serrate leaves, yellowish flowers in many-flowered cymes, and round-flattened fruits about the size of a pea. This vine grows well in southern California. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 776.)

44384 and 44385. *COTONEASTER* spp. Malaceæ.

44384. "Forrest No. 33."

44385. "Forrest No. 5667."

44386. *COTONEASTER DAMMERI* C. Schneid.

A prostrate evergreen shrub, native of central China, with pure-white, solitary flowers, and coral-red fruits a quarter of an inch wide. It is quite hardy and is very distinct among cotoneasters for its perfectly prostrate habit. Its fruits are brightly colored, and the plant will no doubt prove useful as an evergreen carpet shrub; also for covering sunny slopes, as it is very vigorous. It occurs wild on heaths and rocky ground. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 411.)

44387. *COTONEASTER ROYLEI* Hort.

"I have labeled these [small-leaved] forms in several herbaria as [*C. racemiflora*] var. *royleana* Dipp., because I believed that these (especially *C. roylei* or *royleana* Hort.) corresponded with the spontaneous material; but I am now dubious about this and I am holding out the spontaneous forms as the var. *kotschyi*. The named garden forms remain confused." (*Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 754.)

44388. *CRATAEGUS NITIDA* (Engelm.) Sarg. Malaceæ.

Hawthorn.

A tree, up to 30 feet high, from Illinois and Kansas, with spreading branches, coarsely serrate leaves, and dark dull-red fruits about half an inch long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 883.)

44389. *DIERVILLA JAPONICA* (Thunb.) DC. Caprifoliaceæ.

"Forrest No. 7882."

44375 to 44404—Continued.

44390. *HYPERICUM* sp. Hypericaceæ.

St.-John's-wort.

"Wilson No. 256." "From cliffs and thickets, Wushan Hsien, eastern Szechwan, at an altitude of 1,000 meters, 1907. A shrubby plant, 6 cm. tall, with yellow flowers." (*Sargent, Plantae Wilsonianae, vol. 3, p. 452.*)

44391. *JASMINUM* sp. Oleaceæ.

Jasmine.

"Forrest No. 11472."

44392. *LARIX DAHURICA PRINCIPIS-RUPPRECHTII* (Mayr) Rehd. and Wils.
Pinaceæ.

Larch.

A tree from northern China, with beautiful pink cones up to $1\frac{1}{2}$ inches long and leaves up to $1\frac{1}{4}$ inches in length. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1823.*)

See also S. P. I. No. 42194 for further description.

44393. *LAUROCERASUS OFFICINALIS* Roemer. Amygdalaceæ.(*Prunus laurocerasus* L.)

Cherry laurel.

Var. *camelliaefolia*. A garden variety with leaves of ordinary size, but curled and twisted. Curious but not ornamental. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 240.*)

44394. *LONICERA NITIDA* Wilson. Caprifoliaceæ.

Honeysuckle.

An evergreen shrub from western China, up to 6 feet high, with upright branches, broadly oval or oblong glossy leaves, fragrant whitish flowers one-third of an inch long, and purple fruits. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1907.*)

44395. *LONICERA PILEATA* Oliver. Caprifoliaceæ.

Honeysuckle.

A much-branched, low, evergreen or partially deciduous shrub from central and western China, about a foot high, with slender branches, oblong, lance-shaped, dark, shining-green leaves half to an inch long, and pale-yellow flowers in almost sessile pairs. It is quite hardy in England. (Adapted from *Curtis's Botanical Magazine, pl. 8060.*)

44396. *ABIES* sp. Pinaceæ.

Fir.

"Wilson No. 6744."

44397. *PICEA KOYAMAI* Shiras. Pinaceæ.

Spruce.

A Japanese tree, up to 30 feet in height, with bright reddish brown branchlets, bluish white, 4-sided sharp-pointed leaves one-third to half an inch long, and light brownish green cones $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long with broadly oval scales. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2621.*)

44398. *PIPTANTHUS CONCOLOR* Harrow. Fabaceæ.

"Wilson No. 885." A bush, 1 to 1.6 meters tall, found in western Szechwan, China, at elevations up to 3,500 meters. It has alternate, trifoliate leaves, almost the same color above as below, with white hairs on the margins; yellow pealike flowers; and silky pods about 6 mm. long. (Adapted from *Gardeners' Chronicle, December 16, 1916, p. 289.*)

44399. *PYRACANTHA GIBBSII* A. Jackson. Malaceæ.

A shrub from western China up to 14 feet high, nearly spineless, with large, ovate-oblong, variable leaves up to 3 inches long and abundant fruits about 7 mm. in diameter. The leaves are commonly used by the Chinese for tea. (Adapted from *Gardeners' Chronicle, December 30, 1916, p. 309.*)

44375 to 44404—Continued.

44400. *ROSA OMEIENSIS* Rolfe. Rosaceæ.

Rose.

A stout, branched shrub, from 3 to 10 feet high, with young shoots covered with dense bristles and the older stems armed with stout straight thorns. The long green leaves are composed of 9 to 13 sharply serrate leaflets, and the white flowers, which are over an inch in diameter, occur singly on short lateral twigs. The bright-red fruits are up to half an inch in length, and their yellow stalks are very striking in autumn. These fruits are said to be eaten in China, where the plant grows at an elevation of 8,000 to 9 500 feet. It thrives in good loamy soil and may be propagated from the freely produced seeds. (Adapted from *Curtis's Botanical Magazine*, pl. 8471.)

44401. *RUBUS IRENAEUS* Focke. Rosaceæ.

A prostrate evergreen shrub, native of central and western China, beset with small decurved prickles and having white flowers, large red fruits, and simple leaves, suggesting those of coltsfoot. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 460.)

See also S. P. I. No. 40595 for further description.

44402. *RUBUS LASIOSTYLUS DIZYGOS* Focke. Rosaceæ.

An erect deciduous shrub, native of central China, 4 to 6 feet high, with waxy blue-white stems, compound leaves, small, rosy flowers, and agreeably acid, red fruits an inch in diameter. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 462.)

See also S. P. I. No. 42587 for further description.

44403. *STYRAX WILSONII* Rehder. Styracaceæ.

A very pretty, small, compact Chinese shrub with alternate, oval, irregularly dentate leaves up to two-thirds of an inch long, white flowers in axillary and terminal racemes, appearing when the plant is but a few inches high and 2 or 3 years old, and gray-velvety, roundish fruits about one-third of an inch long. It is best propagated by seeds, although layering may be used. On one occasion, in the nursery at Kew, England, this shrub withstood a temperature of 12° F. (Adapted from *Curtis's Botanical Magazine*, pl. 8444.)

44404. *VIBURNUM HUPEHENSE* Rehder. Caprifoliaceæ.

A deciduous shrub, native of Hupeh, China, with coarsely serrate, roundish oval leaves, and flowers in large flat corymbs. The red fruit is ovoid, from one-third to two-fifths of an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 650.)

See also S. P. I. No. 42197 for further description.

44405. *NYPA FRUTICANS* Wurm. Phœnicaceæ.

Nipa palm.

From Manila, Philippine Islands. Seeds presented by Mr. Adn. Hernandez, director, Bureau of Agriculture. Received March 27, 1917.

A creeping Philippine palm with a stout branching rootstock and large leaves 5 to 10 meters long. The sap is collected from the immature inflorescence and made principally into alcohol, and to a less extent into vinegar and sugar. A good preserve is made by boiling the immature seeds in sugar. (Adapted from the *Philippine Agricultural Review*, third quarter, 1916, p. 174.)

For an illustration of the nipa palm in fruit, see Plate VI.

44406. *DAHLIA* sp. Asteraceæ.

Tree dahlia.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

"(No. 106. From Tactic, Alta Vera Paz.) A double white variety of the common tree dahlia. The plant was not seen in bloom, and there is a possibility that it may not be true to name, but the Indian from whom it was obtained assured me that it was the double white form and not the common single pink. The flowers of the double white variety (which seems to be the most beautiful form of all) are used extensively by the Indians of Tactic for decorating the images of the saints. This seems to me to be a very promising plant for cultivation in California. It is likely that this is a cultivated form of *Dahlia maxoni* Safford." (Popenoe.)

44407 to 44417.

From Buenos Aires, Argentina. Seeds presented by the Jardin Botanico. Received March 10, 1917.

44407. *AEXTOXICON PUNCTATUM* Ruiz and Pav. Euphorbiaceæ.

A Chilean tree, sometimes reaching a height of 40 feet, with beautiful dark-green foliage. It thrives in both the dry and moist portions of Chile. (Adapted from *note of W. F. Wight, May 7, 1913.*)

See also S. P. I. No. 36123 for further description.

44408. *CHENOPODIUM* sp. Chenopodiaceæ.

A very small seeded variety, apparently allied to *Chenopodium ambrosioides*.

44409. *GEUINA AVELIANA* Molina. Proteaceæ.

Avellano.

A Chilean evergreen tree, reaching a height of 12 meters. Its large, dark-green, glossy pinnate leaves and axillary racemes of white flowers make a very pleasing combination during the winter. The pleasant-flavored nuts resemble the hazelnut in taste and are eaten raw or cooked. The wood is suited for general carpentry and for cabinetwork, the medullary rays giving it a pleasing appearance. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 39*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1335.*)

44410. *MYRCIARIA CAULIFLORA* (Mart.) Berg. Myrtaceæ. Jaboticaba.

"One of the best indigenous fruits of Brazil, and at the same time one of the most curious and interesting, due to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several species are grown under the name of *jaboticaba*, and they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to *Myrciaria cauliflora* or *M. jaboticaba*, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

"The *jaboticaba* occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, light green in color, and the flowers are white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough, leathery skin, white, juicy pulp of rather acid, aromatic flavor, and two to four flattened oval

44407 to 44417—Continued.

seeds. The resemblance between the *jaboticaba* and some of the grapes of the Muscadine group, e. g., the *James*, is very striking, not only in the general appearance of the fruit but also in flavor.

"The *jaboticaba* prefers a soil that is rich and deep. It is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered localities throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (*Popenoe*.)

44411. NAGEIA ANDINA (Poepp.) F. Muell. Taxaceæ.

(*Podocarpus andina* Poepp.)

A Chilean tree, up to 20 feet in height, with upright or somewhat spreading branches, indistinctly 2-ranked, linear, dark-green leaves half an inch to $1\frac{1}{2}$ inches long, flowers in spikes, and fruits without fleshy receptacles. It is propagated by seeds or by cuttings made from almost ripened wood under glass and grows out of doors only in the Southern States and California. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2725.)

44412. NOTHOFAGUS ANTARCTICA (Forst.) Oerst. Fagaceæ.

Antarctic beech.

A large deciduous South American tree, found from Tierra del Fuego northward to Concepcion, Chile. It has cordate or broadly oval irregularly dentate leaves half an inch to $1\frac{1}{4}$ inches long, and the staminate flowers appear in May singly, in pairs, or in threes. Propagation is by layering. Few trees have greater elegance and distinction than this when young. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 98.)

44413. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

Pelú. A Chilean tree, attaining a height of 10 meters, with green, pinnate leaves, golden yellow flowers, and indehiscent, 4-winged, cork-covered pods. It prefers to grow near rivers, which afford excellent opportunities for the dissemination of the corky pods. The exceedingly hard wood is used for plow points, wheels, etc. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 56.)

44414. TRICONDYLUS DENTATUS (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia dentata* R. Br.)

Avellanillo. A Chilean tree, up to 10 meters in height and 30 cm. in diameter, with alternate, oval, dentate leaves, abbreviated lateral racemes of yellowish white flowers, and papery follicles. Of no industrial value. (Adapted from *Brown, Transactions of the Linnean Society of London*, vol. 10, p. 201, and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 41.)

44415. TRICONDYLUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia obliqua* R. Br.)

Badal. A Chilean tree, with alternate, smooth, serrate leaves, yellowish white flowers in axillary racemes, and papery follicles inclosing winged seeds. Attains a height of 8 to 19 meters, with a diameter of 1 meter. (Adapted from *Brown, Transactions of the Linnean Society of London*, vol. 10, p. 201, and from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia*, p. 39.)

44407 to 44417—Continued.

44416. *PHYLOCLADUS* sp. Taxaceæ.

"Tree or shrub with the branchlets flattened and expanded into rigid and coriaceous, toothed or lobed, leaflike cladodia. The true leaves are reduced to linear scales." (*Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2607.*)

44417. *WEINMANNIA TRICHOSPERMA* Cav. Cunoniaceæ.

Tineo.

A Chilean and Peruvian tree, 15 to 18 meters high, with opposite, unequally pinnate leaves with winged petioles, aromatic white flowers in axillary racemes, and small oval capsules. The great fragrance of the flowers attracts many insects, which lay their eggs in the bark of the tree and produce larvæ which bore into the trunk and make the wood unfit for use. (Adapted from *Castillo and Dey, La Jeografia Botanica del Rio Valdivia, p. 52, fig. 30.*)

44418 to 44425.

From Elstree, Herts, England. Plants presented by Hon. Vicary Gibbs, through Mr. E. Beckett, The Gardens, Aldenham House. Received March 27, 1917.

44418. *BERBERIS AQUIFOLIUM* Pursh. Berberidaceæ.

Barberry.

Var. *ricarii*. A variety originating in the gardens of Hon. Vicary Gibbs and presumably named for him.

"The best of the mahonias." (*Gibbs.*)

44419. *CEANOTHUS HYBRIDUS* Hort. Rhamnaceæ.

Var. *Glorie de Versailles*. A half-evergreen shrubby garden variety, distinguished by its large panicles of bright-blue flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 696.*)

44420. *CEANOTHUS HYBRIDUS* Hort. Rhamnaceæ.

Var. *Perle rose*. A garden variety, with beautiful pink flowers. (Adapted from *V. Lemoine & Fils, Catalogue et Prircourtant, 1914, p. 38.*)

44421. *COTONEASTER* sp. Malaceæ.

"Forrest No. 32."

44422. *COTONEASTER SALICIFOLIA FLOCCOSA* Rehd. and Wils. Malaceæ.

A half-evergreen shrub from western China, up to 15 feet high, with oblong to lance-oblong bright-green leaves; flowers in dense corymbs; and 3-seeded bright-red fruits nearly one-fourth of an inch in diameter. The value of this shrub lies in the ornamental effect of the fruits in autumn. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 867.*)

44423. *MALUS BACCATA* (L.) Moench. Malaceæ.

Crab apple.

(*Pyrus baccata* L.)

Var. *Cashmere* crab. A horticultural variety of the Siberian crab, presumably from Kashmir, India.

44424. *POPULUS SZECHUANICA* C. Schneid. Salicaceæ.

Poplar.

A common tree in the forests of Szechwan, China, growing to a large size, with massive branches and stout branchlets. It has very large, ovate, elongated or rounded leaves. It is hardy in the northeastern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2763.*)

44418 to 44425—Continued.**44425.** *PYRUS* sp. Malaceæ.

Pear.

A variety received without description.

44426. *ROSA ODORATA* (Andr.) Sweet. Rosaceæ.

Rose.

One of two roses associated with S. P. I. No. 22449. Renumbered for convenience in distribution.

"A rose which Mr. Meyer sent in from China, which he collected in a garden at Pautungfu, Chihli Province. For several years past it has attracted considerable attention as a pillar rose. The form that Mr. Meyer collected produces small, double, white flowers with pale pink centers; it blooms quite freely. Although it is an attractive rose, the discovery by Mr. Edward Goucher of its peculiar usefulness as a stock on which to bud or graft other roses now constitutes its chief interest to rose growers. Cuttings of the young wood grow so readily that with ordinary care 90 to 95 per cent of those put in an ordinary propagating bench will root. It has also been found that the vigorous young canes, often 5 to 8 feet long, can be used as a stock upon which to insert between each two leaves or eyes, in the manner of ordinary shield or slip budding, buds of any varieties it is desired to propagate. Later, when these buds have united, the canes are made into ordinary cuttings, each with a bud of the desired variety, which will root readily in slight bottom heat in an ordinary sand propagating bench, while the inserted buds will give rise to strong, healthy plants.

"Further, this rose has been successfully used as a grafting stock. The young canes are cut into suitable lengths and upon these are cleft-grafted or 'worked' scions or pieces of wood of the desired variety. The completed grafts are then potted singly in small pots, which are placed in an ordinary sweat box used for young grafted stock and maintained at a temperature of 75° to 80° F. Simultaneously the cuttings root and the grafts grow, and as many as 90 per cent of the cuttings thus made have succeeded." (*Peter Bisset.*)

44427 to 44431.

From Canton, China. Seeds presented by Mr. G. Weidman Groff, Canton Christian College. Received March 13, 1917.

44427 and 44428. *BRASSICA* spp. Brassicaceæ.

Mustard.

44427. "*T'ai ts'eng shao po* (Taai ts'eng shiu paak)."**44428.** "*Pen t'ai* (Poon tei)."**44429 to 44431.** *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

44429. "*Hua mien* (Fa min)."**44431.** "*Tung kua.*"**44430.** "*Pa chih.*"**44432.** *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

From Shensi, China. Presented by Dr. A. C. Selmon, superintendent of the North China Mission of Seventh-Day Adventists, Nanking, China. Received January 2, 1917.

"Some months ago I was traveling in the northwest of China in the Province of Shensi, where the climate is very dry. There I found that the farmers raised a plant somewhat resembling alfalfa, which also grew wild. I found a specimen of it growing on the top of the city wall (60 feet high) at Sianfu, the capital of Shensi Province. It makes a very good rough feed for stock." (*Selmon.*)

44433 to 44436.

From Oran, Salta, Argentina. Seeds presented by Mr. S. W. Damon. Received March 7, 1917.

44433. GOURLIEA DECORTICANS SUBTROPICALIS Lillo. **Fabaceæ.**

Chañar. A tall tree, native of northern Argentina, with a crooked, tapering trunk about 1.4 meters (4½ feet) in diameter and yellowish, coarse, soft wood, which is not used commercially. This variety differs from the typical species in the tapering trunk and the manner in which the bark peels off. (Adapted from Lillo, *Contribución al Conocimiento de los Arboles de la Argentina*, p. 43.)

44434 and 44435. PROSOPIS CHILENSIS (Molina) Stuntz. **Mimosaceæ.**
(*P. juliflora* DC.) **Algaroba.**

The algaroba is a leguminous tree, native to Argentina, usually 30 to 40 feet tall, with sweetish succulent pods which are fed to cattle. The wood is used for general carpentry.

44434. Algarroba negro. A form with dark-colored pods.

44435. Algarroba blanco. A form with light-colored pods.

44436. ZIZIPHUS MISTOL Griseb. **Rhamnaceæ.** **Mistol.**

A spiny tree, native of Argentina, up to 30 feet in height, with oval leathery short-stemmed leaves about an inch long and edible black fruits about one-third of an inch in diameter. The hard, red wood is not used commercially. (Adapted from Bailey, *Standard Cyclopædia of Horticulture*, vol. 6, p. 3548, and from Lillo, *Contribución al Conocimiento de los Arboles de la Argentina*, p. 85.)

44437 and 44438.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 30, 1917.

44437. LYCOPERSICON ESCULENTUM Mill. **Solanaceæ.** **Tomato.**

"(No. 90a. From Antigua, Guatemala, February 26, 1917.) Seeds of a small native tomato which is commonly grown and used in the high lands of Guatemala as well as in some parts of the low lands. The plants are exceedingly vigorous and productive; the fruits are up to an inch or slightly more in diameter and of good flavor. While I have not seen this plant in the wild state, it is said by the natives to occur as a wild plant." (Popenoe.)

44438. ABUTILON sp. **Malvaceæ.**

"(No. 91. From Zacapa, Guatemala, March 15, 1917.) Cuttings of a handsome malvaceous shrub, 6 to 10 feet high, which is abundant in the mountains back of Zacapa at elevations of about 2,000 feet and has also been seen toward Gualan, at a low elevation in the lower Motagua valley. At this season of the year the plants are almost devoid of foliage and are a mass of brilliant yellow flowers. Individually the flowers resemble a single hibiscus, but are slightly smaller, being about 2 inches broad; they are golden yellow in color, with a crimson center. The plants bloom through a considerable period. For trial in southern California and Florida." (Popenoe.)

44439. PERSEA AMERICANA Mill. Lauraceæ.
(P. gratissima Gaertn. f.)

Avocado.

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January to March, 1917.

"(No. 92. Avocado No. 15.) *Nabal*.¹ For productiveness combined with desirable form and excellent quality of fruit, this variety seems particularly worthy of trial in the United States. While not a large avocado, it is excellent in every way, having a smooth green surface, rich yellow flesh of good flavor, and a seed not unduly large in comparison to the size of the fruit. In addition, it seems to be slightly earlier in season than the average.

"The parent tree was accidentally destroyed in June, 1917, by a laborer who was planting coffee. It stood among coffee bushes in the Finca Santa Lucia, 7a Calle Poniente, near the Alameda de Santa Lucia, Antigua, Guatemala. The soil in this finca is a rich, black, sandy loam of volcanic origin, deep and apparently very fertile. The tree was young, probably not more than 6 or 7 years old. It stood about 25 feet high, with a trunk 6 inches in diameter at the base, branching 10 feet from the ground. The crown was open, scantily branched, with little bearing wood. The young growths were strong, stout, vigorous, and the budwood was excellent, having large, vigorous eyes. The variety should not be difficult to propagate, and the indications are that it will be a good grower, though it is impossible to speak with certainty in regard to this latter point. The wood is rather tough for an avocado.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardiness in a variety, but it seems reasonable to expect that varieties from this elevation will be as hardy as the average of the Guatemalan race. There is no way of determining whether they are hardier than the average until they are tested in the United States.

"The parent tree did not flower in 1917. Since flowers are nearly always produced at the same time as the spring flush of growth, however, it may be suspected that the flowering season of the variety will be rather late, since the spring growth did not appear this season until the end of March. The heavy crop of fruit produced last year probably prevented the tree from flowering this season. When first examined, in October, 1916, the tree was carrying more than 300 fruits. It ripened this crop—an unusually large one for a tree of such small size, when the size of the fruit is considered—in February and March, 1917, at which time they were all picked. They would probably have remained on the tree until June if they had been allowed to do so.

"The fruit is nearly spherical in form, of convenient size for serving a half fruit as a portion. It weighs 10 ounces or a little more. The surface is smooth, bright green, very attractive in appearance. The skin is sufficiently thick to make the fruit a good shipper and is of the characteristic Guatemalan texture. The flesh is rich yellow in color, quite free from fiber or discoloration, and very rich in flavor. The seed is tight in the cavity and slightly below the average in size. Considered from all points of view, it bears every indication of being an excellent little fruit.

"A formal description of the variety follows:

¹ This and other varietal names for Mr. Popenoe's Guatemalan avocados are arbitrarily selected from appropriate words in the Maya language. It has seemed wiser thus to give these plants names which would indicate the origin of the variety than to give them English names that could convey no hint of the source whence the plants had come.

"Form almost spherical; size below medium, weight about 10 ounces, length 3½ inches, breadth slightly over 3 inches; base scarcely extended, the stem inserted almost squarely without depression; apex rounded, with a slight depression around the stigmatic point; surface undulating to finely pebbled, dull green in color with numerous very minute yellowish dots; skin not very thick, scarcely up to one-eighth of an inch over any portion of the fruit, separating readily from the flesh, woody, brittle; flesh yellow, greenish toward the skin, free from fiber or discoloration, of firm, smooth texture and rich flavor; quality excellent; seed rather small, nearly spherical in form, weighing slightly more than 1 ounce, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

44440. PERSEA AMERICANA Mill. Lauraceæ.
(*P. gratissima* Gaertn. f.)

Avocado.

From Guatemala. Budwood collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March to June, 1917.

"(Nos. 94, 110, 116, 138. Avocado No. 17.) *Nimlio*. It is rare to find a large-fruited avocado which is at the same time very productive. In this variety, however, these two characteristics are both combined to an unusual degree. In addition, the quality of the fruit is excellent, the flesh being rich yellow in color, free from discoloration, and of very rich flavor. The habit of the tree and the character of the wood indicate that the variety may not be a very strong grower.

"The parent tree is growing in a sitio belonging to Trinidad Hernandez, Callejon de Concepción No. 28, Antigua, Guatemala. The elevation is approximately 5,100 feet. The soil is a very sandy loam, black, loose, deep, and undoubtedly very fertile. The tree stands close to the wall, with no other large trees close to it. It is very poorly cared for. Its age is not known, but it is probably 15 years. It is about 25 feet high, the trunk is 14 inches thick at the base, and the first branches 12 feet from the ground. The crown is broadly oval, of good form, and rather dense. It looks, however, as though the variety might be a diffuse grower when young, with long heavy shoots inclined to droop. The wood is unusually brittle, and the budwood very poor, the eyes being stalked or losing their bud scales and falling early. The tree is badly attacked by leaf-gall, and there are a good many scale insects on it.

"The elevation of Antigua, 5,100 feet, is not great enough to insure unusual hardness in a variety, and pending a test in the United States it can only be assumed that this avocado is of about average hardness for the Guatemalan race.

"The flowering season is from the latter part of February to the end of March. According to the owner of the tree, it always bears at least a few fruits, but it is to be expected that a tree which produces such a crop as this one did in 1917 will not bear heavily the following year. While an accurate count was not made, the crop this season was estimated at 300 to 400 fruits. The normal size of the fruit is between 2 and 3 pounds, but owing probably to the large number on the tree many do not develop to a greater size than 1 pound. Probably good culture and thinning would result in a crop of uniformly large fruits. The season of ripening is earlier than some, most of the fruits being fully ripe in February and March.

"In form this avocado is broadly oval, usually somewhat oblique. The surface is deep green and rather rough, while the skin is thick and woody. The

flesh is rich cream yellow in color, smooth and entirely free from fiber or discoloration. The flavor is of the very best, rich, bland, and pleasant. The seed, while large, is not large in comparison to the great size of the fruit, and the proportion of flesh to seed is quite satisfactory.

"Those who are interested in large avocados should by all means give this variety a trial. Its only visible defect is the tendency to produce weak branches, but if pruning and good culture can produce a reasonably shapely and vigorous growth the variety seems likely to prove of great value in the United States.

"A formal description of the fruit follows:

"Form broadly oval, sometimes oblong-oval, and always more or less oblique; size extremely large, perfectly developed fruits weighing 36 to 45 ounces and measuring $5\frac{1}{2}$ to 6 inches in length by $4\frac{1}{2}$ to 5 inches in breadth; stem rather short and very stout, inserted obliquely without depression; base slightly flattened obliquely, not decidedly so; apex rounded to obliquely flattened; surface heavily pebbled in most instances, occasionally lightly pebbled, deep green in color, with numerous irregular, large, yellowish dots; skin moderately thick, one-sixteenth of an inch toward the base of the fruit and one-eighth of an inch toward the apex, separating readily from the flesh, coarsely granular and brittle; flesh firm, oily, smooth, rich cream yellow, tinged with green toward the skin, free from fiber or discoloration and very rich, pleasant flavor; quality excellent; seed medium sized, roundish conic or oblate-conic, weighing 4 ounces, tight in the cavity with both seed coats adhering closely." (*Popenoe*.)

44441 and 44442.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist, Tucuman Experiment Station. Received March 27, 1917.

44441. CAESALPINIA MELANOCARPA Griseb. Caesalpiniaceæ. **Guayacán.**

"The *guayacán* is a very hard-wooded tree, tall and spreading, with smooth white bark. The heavy lumber is used in the manufacture of heavy 2-wheeled carts and for similar objects. It is also cut for railroad ties and for fence posts, lasting in this capacity 30 years and more. It is frequently difficult to drive nails into even the green wood. The seed pods contain a great deal of tannin and are used for ink manufacture." (*Schultz*.)

44442. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. **Mistol.**

A spiny tree from Argentina, up to 30 feet in height, with oval, leathery, hoary pubescent leaves about an inch long and edible black fruits one-third of an inch in diameter, with large stones. The wood is red and hard, but is not known to be of commercial use.

See S. P. I. No. 40853 for previous introduction.

44443. PERSEA AMERICANA Mill. Lauraceæ. **Avocado.**
(*P. gratissima* Gaertn. f.)

From Guatemala, Guatemala. Seeds purchased by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Numbered March, 1917.

A collection of seeds sent in for stock purposes.

44444 and 44445. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(P. gratissima Gaertn. f.)

From Antigua, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received March 7, 1917. Quoted notes by Mr. Popenoe.

The plants grown from these seeds are not to be budded, but will be distributed as seedlings to those who wish to plant a seedling tree of good parentage on the possibility of obtaining a valuable new variety.

44444. "(No. 88a. From the Finca el Manchen, February 16, 1917.) The variety is very productive. The fruit is pyriform, about a pound in weight, deep purple in color and slightly rough on the surface; the skin is thick and the flesh of deep yellow color and rich flavor. The seed is moderately small, tight in the cavity."

44445. "(No. 89a. Avocado No. 16. From the Finca Santa Lucia, February 16, 1917.) This is a fruit of good large size, with a rather small seed. It is a productive variety, the parent tree, which is about 20 feet high with a slender crown and little fruiting wood, carrying 100 fruits this season.

"Form oblong-spherical; size above medium to large, weight 15 to 17 ounces, length $4\frac{1}{4}$ inches, breadth $3\frac{1}{4}$ inches; base flattened, with the stem inserted slightly to one side in a shallow, flaring cavity; apex obliquely flattened; surface smooth to undulating, deep purple in color, almost shining, with numerous rather large yellowish dots; skin moderately thick, slightly over one-eighth of an inch, coarsely granular, separating readily from the flesh, but very brittle; flesh pale cream color, tinged pale green toward the skin, of mild, pleasant flavor; quality good; seed small in comparison to size of fruit, decidedly oblate, weighing about $2\frac{1}{2}$ ounces, tight in the cavity, with both coats adhering closely. Season February to June."

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BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1917.

(No. 51; Nos. 44446 to 44934.)



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BUREAU OF PLANT INDUSTRY.

Chief of Bureau, WILLIAM A. TAYLOR.
Associate Chief of Bureau, KARL F. KELLERMAN.
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Assistant in Charge of Business Operations, H. E. ALLANSON.

FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, Agricultural Explorer in Charge.

P. H. Dorsett, Plant Introducer, in Charge of Plant Introduction Gardens.
B. T. Galloway, Plant Pathologist, Special Research Projects.
Peter Bisset, Plant Introducer, in Charge of Experimenters' Service.
Willson Popenoe and Joseph F. Rock, Agricultural Explorers.
R. A. Young, Plant Introducer, in Charge of Dasheen Investigations.
H. C. Skeels, Botanist, in Charge of Collections.
G. P. Van Eseltine, Assistant Botanist, in Charge of Publications.
L. G. Hoover, Assistant Plant Introducer, in Charge of Chayote Investigations.
C. C. Thomas, Assistant Plant Introducer, in Charge of Jujube Investigations.
E. L. Crandall, Assistant, in Charge of Photographic Laboratory.
P. G. Russell and Patty T. Newbold, Scientific Assistants.
David A. Bisset, Superintendent, Bell Plant Introduction Garden, Glenn Dale, Md.
Edward Goucher, Plant Propagator.
J. E. Morrow, Superintendent, Plant Introduction Garden, Chico, Calif.
Henry Klopfer, Plant Propagator.
Edward Simmonds, Superintendent, Plant Introduction Garden, Miami, Fla.
Charles H. Steffani, Plant Propagator.
Henry E. Juenemann, Superintendent, Plant Introduction Garden, Bellingham, Wash.
Wilbur A. Patten, Superintendent, Plant Introduction Garden, Brooksville, Fla.
E. J. Rankin, Assistant in Charge, Plant Introduction Garden, Savannah, Ga.
Collaborators: Thomas W. Brown and Robert H. Forbes, Cairo, Egypt; A. C. Hartless, Seharunpur, India; Barbour Lathrop, Chicago, Ill.; Dr. H. L. Lyon, Honolulu, Hawaii; H. Nehrling, Gotha, Fla.; Charles T. Simpson, Little River, Fla.; Dr. L. Trabut, Director, Service Botanique, Algiers, Algeria; H. N. Whitford, School of Forestry, New Haven, Conn.; E. H. Wilson, Arnold Arboretum, Jamaica Plain, Mass.; E. W. D. Holway, Faribault, Minn.; Dr. William Trelease, Urbana, Ill.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1917 (NO. 51; NOS. 44446 TO 44934).

INTRODUCTORY STATEMENT.

The period covered by this inventory is that immediately following the entry of America into the great World War, and it is interesting to record the fact that the work of plant introduction carried on by the office was continued without interruption and that during the three months—April, May, and June—489 new introductions were brought in, carefully inspected, held in the detention greenhouses when necessary, and later sent out to experimenters.

The foreign exploration work was more seriously affected, although it had already felt the effects of the war. Nevertheless, during this period Mr. Meyer continued his exploring work under difficulties along the Yangtze River between Hankow and Ichang and Mr. Wilson Popenoe made a study of the seedling avocado varieties of Guatemala, making excursions on horseback to Antigua, the Los Altos region, Amatitlan, Chimaltenango, Solola, and Totonicapam, where he obtained some of the most promising selections of his collection.

The avocado varieties listed in this inventory are the *Panchoy*, an early-ripening variety; the *Benik*, a midseason sort; the *Tumin*, an unusually productive sort with fruit resembling the *Trapp* in shape; the *Kekchi*, a small, very early sort with a long ripening season; the *Mayapan*, which Mr. Popenoe believes is one of the best of all; the *Cabnal*, a variety with a particularly nutty flavor; the *Cantel*, which has a very small seed; the *Pankay*, which he found at an altitude of 8,500 feet, which is more than 1,000 feet above the zone of citrus fruits; and the *Tertoh*, which produces fruits weighing 4 pounds. This collection of selected avocado seedlings was made with the greatest care. Not only has Mr. Popenoe placed on record in this office a description of the exact locality of each original tree from which he took bud wood, but he made a photograph of the tree itself, wherever it was possible, showing its habit of growth and productiveness; a photograph of the fruit, showing its shape and size and the

relation between seed and flesh and the thickness of the skin; and a most careful pomological description of its flavor, texture, and other characteristics, together with notes written in the field as to its probable season of ripening and productivity. In other words, Mr. Popenoe's collection, as it is being sent out to growers for trial, has had eliminated from it about all the chances for disappointment which it is humanly possible to eliminate when a foreign fruit tree is introduced into an entirely new environment. While the season of ripening may change, the degree of frost which it will stand may change, and even the flavor be affected, it is not to be expected that any great changes in the form of the fruit or in the proportion of seed to flesh will appear in his collection when the fruits ripen in the United States. The difficulty which nurserymen and growers find in handling the cumbersome numbers under which the plants of this office are sent out made it appear necessary to assign names to the various seedlings. In order to do honor to the people from whose country they came and to distinguish them as emigrants from that country, selected names were taken from the Maya language. To this race belongs the distinction of having learned the value of the hard-skinned avocado, and it seems proper that as these Guatemalan varieties become commercially grown in this country they should be called by these Maya names rather than by Americanized names which have no real philological significance. It is believed that these names will enrich rather than impoverish the language of that commerce which is growing up about this important food plant. See *Persea americana*, Nos. 44625 to 44628, 44679 to 44681, 44781 to 44783, 44785, and 44856.

While looking for varieties of the avocado, Mr. Popenoe found a very rare species of *Persea* known as the *coyó* or *shucte* (*Persea schiedeana*, No. 44682) which deserves to be introduced into all strictly tropical countries. In its wild state and without any attempts having been made at its domestication, it appears to have seedlings which rival the avocado in the size of their fruits and in the quality of these fruits for the table. It seems to have been completely overlooked by the tropical botanic gardens of the world.

Mr. Popenoe also obtained material of the following: The tortoise-shell custard-apple (*Annona testudinea*, No. 44774) which bears fruit with large seed, hard shell, and flesh that is devoid of all grittiness; the monkey-flower tree (*Phyllocarpus septentrionalis*, No. 44775), a species which, according to the explorer, compares in beauty with the royal poinciana and produces in January a mass of crimson-scarlet flowers; the lignum-vitæ (*Guaiacum guatemalense*, No. 44858), which as a small tree with evergreen foliage has already attracted attention in Florida and which, according to Mr. Popenoe,

has "attractive lavender-purple flowers distinguishable for long distances across the plains"; and a wild cherry (*Prunus salicifolia*, No. 44885) of the Guatemalan highlands, which bears fruits three-fourths of an inch in diameter, with a flavor suggesting the Bigarreau cherry. The facts that this cherry produces its fruits in racemes and that the individual fruits are of such unusual size suggest that it be tried in crosses with the chokecherries of the northern United States.

The desire persists in the Tropics for a tropical grape of good quality, and possibly the callulos (*Vitis* sp., No. 44921), which has unusually large berries in a solid bunch and which has shown itself adapted to cultivation in Florida, may contribute toward that end.

Of seeds and plants which have come in as a result of the interest of foreigners or have been imported through correspondence, the following merit mention in this statement:

The guabiroba (*Compomanesia fenziiana*, No. 44784), a fruit tree of which a new quantity of seed has been sent in from Lavras, Brazil, by Mr. Hunnicutt, was first brought to this country by Messrs. Dorsett, Shamel, and Popenoe in 1914. Three-year-old trees of it which were standing in the plant-introduction garden at Miami were not injured by the freeze of 1917 and have already flowered. This shows promise of becoming a valuable fruit plant where it can be grown.

Consul Dawson, of Rosario, has sent in the seeds of a bitter variety of corn (*Zea mays*, No. 44564) which has proved of interest to those sections of Argentina which are overrun by locusts or grasshoppers, owing to the fact that the leaves are so bitter that these insects will not eat it unless there is nothing else to devour. Although the variety is a poor yielder and the corn itself is not immune to the attacks of the locusts, is it not possible that so striking a character as that of bitterness might be valuable in breeding work for the purpose of producing varieties of corn immune to various insects and fungous diseases?

It is a curious coincidence that the highbush cranberry of the Northwestern States and the Kansu viburnum (*Viburnum kansuense*, No. 44547) should both be used for the making of preserves. In the improvement of our native species (*V. americanum*), may not the Chinese species be of value?

The susceptibility of one of our best ornamental bushes, the barberry, to the wheat rust and the fact that the various species of barberries cross easily make it a problem of not a little importance to get the various species of these shrubs together and by crossing them to produce superior forms. The existence of hardy evergreen forms and of forms with seedless fruits can not but add to the possi-

bilities of the situation. As these shrubs are among the most hardy known, as they are very heavy bearers, and as some of the varieties are seedless, a large-fruited seedless variety which could be used for jam production might not be so unimportant as it would seem at first thought (*Berberis* spp., Nos. 44523 to 44530).

Through the Central Experimental Farm of Ottawa, Ontario, a remarkable collection of new selected seedling varieties of apples (Nos. 44713 to 44720) has been introduced. Five of them are seedlings of the well-known Wealthy variety, which, because of the hardiness of the trees and the most excellent eating qualities of the fruit, deserve especial attention by our horticulturists in the northern tier of States.

In connection with the search for a species of the genus *Pyrus* which might prove immune to the pear-blight, is it not possible that the closely related genus *Docynia*, of which the species *D. delavayi* occurs in western Szechwan and also in Yunnan, might furnish such a species and at the same time prove a suitable stock for the cultivated pear? E. H. Wilson photographed a tree which was 25 feet tall and 7 feet in circumference and reports it to bear edible fruits 1 inch long. No. 44677 represents seeds of this species sent in by Mr. Frank Pilson, but it can be easily grown from cuttings.

The existence of delicious-fruited hybrids between the cherimoya and the sugar-apple, produced independently by Wester in the Philippines and by Simmonds in Florida, and the fact, according to Pittier, that these hybrids occur in Venezuela and are recognized as distinct from the ordinary cultivated anonas, make the production by Wester of a hybrid which represents three species (Nos. 44671 to 44673) of special interest. The large number of related species and the fact that so many of them have edible fruits and that, as orchard trees, they bear early would seem to single out this family, Annonaceæ, as one particularly favorable for the plant breeder's work. The biribá of Brazil, *Rollinia mucosa* (Nos. 44658 and 44659), is another species introduced for the breeders of this family.

The great beauty of the different species of *Styrax* for use as shrubs around the dooryard, where they follow in their flowering habit the early-flowering shrubs like the lilac and spirea, will make the collection (*Styrax* spp., Nos. 44591 to 44595) imported from Chenault & Sons, Paris, welcome to nurserymen.

Dr. E. D. Merrill, of the Department of Agriculture of the Philippine Islands, has sent in a remarkable species of ornamental *Ficus*, *Ficus pseudopalma* (No. 44470), from Corregidor, which, because of its resemblance to a slender-stemmed palm, is known as the little coconut. It has a crown of leaves which are nearly a meter in length.

In the Coachella Valley the most rapidly growing species of tree is a North African tamarisk (*Tamarix aphylla*). It makes so remarkable a growth there that trees 2½ years old have a girth of 3 feet a foot above the ground. Dr. Trabut sends with the seed of this species (No. 44554) the information that a mite (acarid) in the Sahara produces galls on the tree which contain as high as 45 per cent of pyrogallic tannin; and the suggestion of the use of this remarkable tree as a source of tannin is perhaps allowable.

Though the parkways are often lined with what is called *Catalpa bungei*, in reality a form of *C. bignonioides*, the true *C. bungei* is a very rare tree in this country. Mr. Frank N. Meyer pointed out some years ago that it had unusual promise as a timber tree for the semi-arid regions of the Southwest along irrigating ditches. It grows to a height of 100 feet; its timber resembles walnut and is in great demand for table tops and furniture because of its nonwarping character. It is extensively planted by the Chinese. (No. 44664.)

Without raising the question of the landscape value of the common *Casuarina equisetifolia*, which has been planted by millions along the roadways of southern Florida, the doubtful hardiness of that species as contrasted with at least one of the other species (*C. cunninghamiana*) has made it advisable to secure the other members of this genus, and No. 44909 (*C. stricta*) and No. 44532 (*C. cunninghamiana*) are recorded in this inventory. If they prove to be hardier than *C. equisetifolia*, a good deal will be gained.

There seems to be some advantage in the use of certain kinds of melons in the making of preserves, especially types which have rinds containing large amounts of pectose. The Mankataan melon of Natal, *Citrullus vulgaris* (No. 44842), which will keep six months and is used extensively in Cape Colony for preserving, is worth the attention of housekeepers.

So many valuable grasses have come from South Africa and Australia that a species on which sheep pasture at altitudes of 6,000 feet near Pretoria, *Panicum serratum* (No. 44518), and the meadow rice-grass of Australia and New Zealand, *Microlaena stipoides* (No. 44802), which is said to bear overstocking better than any other grass native there, are worth trying on the high-altitude pastures of the Pacific slope, where a ground cover which will hold moisture is so much needed.

We are so accustomed to connecting the flavor of onions with a round-bladed species of bulbous plant that Dr. Trabut's newly domesticated *Allium triquetrum*, with triangular leaves, strikes one as remarkable. The onion odor is scarcely perceptible in it, although as a vegetable it is very delicate indeed (No. 44793).

The demand for large-fruited varieties of olives for pickling purposes may make the Tafahi olive (No. 44709) from the Fayum Oasis of Egypt peculiarly interesting to olive growers, for it is 4.5 cm. long and 3 cm. in shorter diameter, according to Prof. S. C. Mason, who arranged for its introduction.

It is a curious fact that in Great Britain black currants are looked upon as a delicacy, while in America little or no attention is paid to this fruit, although it is peculiarly adapted to cultivation in the extreme North. Collections of black and red currants are represented in this inventory under Nos. 44475 to 44499, 44581 to 44587, 44638 to 44648, 44706, 44707, and 44904.

The Chinese grafted jujube has reached a stage in this country where it will soon go on a commercial basis, but the investigation of all the other forms of the jujube which are to be found in the world should go on, and the tropical species from Khartum, *Ziziphus mucronata* (No. 44748), may be of value.

The question whether it would ever be profitable to cultivate the species of *Acacia* which yield the gum arabic of commerce is one which can hardly be expected to be answered a priori. The fact that to-day the Brazilian sources of Para rubber have sunk into insignificance in comparison with the plantation rubber from the cultivated Para rubber trees in the East Indies should certainly make advisable an investigation of the possibilities of desert plantations of these gum-producing plants. For this purpose two of the African gum acacias have been introduced (Nos. 44922 and 44923).

The new problem of growing chestnuts in orchards, which the chestnut bark disease has brought up, has attracted attention to the smaller species of oriental chestnut trees, such as *Castanea mollissima*, and to the hybrids between our chinkapin and the Japanese chestnut. Is it not possible that a dwarf species of the related genus *Castanopsis* may have value in this breeding work? Seeds of this species, *Castanea mollissima* (No. 44448), from Nanking, have been sent in by Rev. Joseph Bailie, of Nanking, who has just had the distressing experience of being beaten nearly to death by Chinese bandits while at work to help the Chinese establish a better forest policy.

The introduction by Mr. H. M. Curran of a species of cactus, *Cephalocereus lanuginosus* (No. 44454), from Curaçao, which has attractive red fruits, brings up the whole question of the utilization of the fruits of the *Opuntias* in this country. With thousands of acres in California where the best fruit-bearing varieties will grow to perfection and with hundreds of people in the Eastern States who have been accustomed from their childhood in the Mediterranean region to eat the "fico d'India," it seems unfortunate that a method has not been devised for the removal of the small spicules which are

invariably scattered in pustules over these fruits. Such a discovery, it would seem, would raise a perfectly good, wholesome, and perhaps even medicinal fruit from a state of local consumption to one in which it could compete with other fruits in the world market. It has as remarkable keeping qualities as any fruit known. Specimens have been kept successfully in cold storage for over a year.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript has been prepared by Mrs. Ethel M. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., December 24, 1919.

INVENTORY.¹

44446. *OPUNTIA MONACANTHA* (Willd.) Haw. Cactaceæ.

From Singapore, Straits Settlements. Cuttings presented by Mr. I. Henry Burkill, director, Botanic Gardens. Received April 2, 1917.

"*Opuntia monacantha* is the only species of its genus which has established itself wild here, and that only very sparingly." (Burkill.)

"An upright, branching cactus, native of Argentina, reaching a height of 6 feet or more, with rather thick, oblong, flat joints 5 to 12 inches long; areoles furnished with yellowish brown bristles; and one or two erect, yellow or brown spines up to 1½ inches long in each fascicle. The yellow flowers are about 3 inches wide, and the red, spiny, pear-shaped fruits are sometimes proliferous." (J. N. Rose.)

44447. *OMPHALOPHTHALMA RUBRA* Karst. Asclepiadaceæ.

From Curaçao, Dutch West Indies. Collected by Mr. H. M. Curran. Received April 2, 1917.

"*Mari poni poen*. Green fruit, cooked as a vegetable." (Curran.)

A climbing shrubby, hairy plant, native of the island of St. Martin, West Indies. with opposite long-petioled, heart-shaped leaves nearly 3 inches long and dark-purple, rather small flowers in the axils of the leaves. (Adapted from Karsten, *Florae Columbiae*, vol 2, p. 119, pl. 163.)

44448 and 44449.

From China. Presented by Rev. Joseph Bailie, University of Nanking, Nanking. Received April 2, 1917.

44448. *CASTANEA MOLLISSIMA* Blume. Fagaceæ.

Chestnut.

"Chestnuts from the capital of Anhwei." (Bailie.)

44449. *CASTANOPSIS* sp. Fagaceæ.

Chestnut.

"Dwarf chestnuts from the country near Anchin, Province of Anhwei." (Bailie.)

44450. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ. Gourd.

From San Juan Bautista, Tabasco, Mexico. Presented by Mr. Gabriel Itié, director, Agricultural Experiment Station. Received April 3, 1917.

"Known under the native name of *hux*. The very large fruit is used as a containing vessel." (Itié.)

¹ All introductions consist of seeds unless otherwise noted.

44451 to 44468.

From Curaçao, Dutch West Indies. Collected by Mr. H. H. Curran. Received April 3, 1917. Quoted notes by Mr. Curran.

44451. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. Okra.
(*Hibiscus esculentus* L.)

"Ciamko. A malvaceous plant, the green seed pods of which are cooked as a vegetable and are very palatable, having a slight mucilaginous quality." (See S. P. I. No. 37806.)

44452. ACACIA VILLOSA (Swartz) Willd. Mimosaceæ.

"Watapaana sjimaron. Markets at Willemstad, March 9, 1917."

A thornless shrub, native to Curaçao, Dutch West Indies, with pinnate leaves composed of 10 to 15 pairs of leaflets, each about 5 cm. (2 inches) long, flower heads in a curtainlike inflorescence, and flat, dry, brown pods. The natives call it *Mata galienja* and *wild dividivi*. (Adapted from Boldingh, *Flora voor de Nederlandsch West Indische Eilanden*, p. 206.)

44453. ANNONA MURICATA L. Annonaceæ.

Soursop.

"Sorsaaka. Edible fruit. March 9, 1917."

"A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves, large flowers with fleshy petals, and very large, fleshy, green fruits often as large as a child's head and weighing as much as 5 pounds, containing white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice, and the pulp makes excellent jelly and preserves. It is easily propagated from seeds or by budding." (W. E. Safford.)

44454. CEPHALOCEREUS LANUGINOSUS (L.) Britt. and Rose. Cactaceæ.

"Kadoesji. Edible fruit. March 9, 1917."

"An upright, columnar, unbranched West Indian cactus, up to 6 cm. (2½ inches) in diameter, with eight or nine ribs, round areoles covered with brown wool which turns gray and finally disappears, and two kinds of spines borne in the areoles. The 8 to 10 radial spines are up to 2 cm. (four-fifths of an inch) in length, and the central spines, up to four in number, are reddish brown and about 3.5 cm. (1½ inches) long. The flowers are about 5 cm. (2 inches) long, funnel shaped, with green sepals and red-margined petals. The nearly globular, soft, fleshy red berry is about 3.5 cm. (1½ inches) in diameter, filled with shining black seeds. (Adapted from Schumann, *Gesamtbeschreibung der Kakteen*, p. 183, as *Pilocereus lanuginosus*.)

44455. COCCOLOBIS DIVERSIFOLIA Jacq. Polygonaceæ.

"Kawaalia. Edible fruit. March 9, 1917."

A small West Indian tree, 8 or 10 feet high, with greenish brown branches; bright-green, leathery, smooth, shiny leaves which are very variable in shape; white, inconspicuous flowers in spikes 4 to 6 inches long; and round, purple-fleshed drupes about the size of a small cherry. The natives eat the fruits, but the flavor is not very pleasant. (Adapted from W. J. Hooker, *Exotic Flora*, vol. 2, pl. 102.)

44451 to 44468—Continued.

44456. HAEMATOKYLUM BRASILETTO Karst. Cæsalpiniaceæ.

"*Brazieja*." A small tree, native of the Dutch West Indies, with stout thorns on the outer branches, compound leaves composed of three or four pairs of notched leaflets up to 3.5 cm. (1½ inches) long, with a thorn at the foot of each leafstalk, short clusters of flowers, and flat pods. (Adapted from *Boldingh, Flora voor de Nederlandsch West Indische Eilanden*, p. 212.)

44457. HOLCUS SORGHUM L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum.

"*Maiz chikitoë hasen harina*."

44458. MALPIGHIA PUNICIFOLIA L. Malpighiaceæ.

"*Sjimaroeke*. Edible fruit, March 9, 1917."

A shrub, native to the Dutch West Indies, about 12 feet high, with smooth, oval leaves 4 cm. (1½ inches) long, flowers in the axils of the leaves, and edible stone fruits. In some of the islands this is called *cherry*. (Adapted from *Boldingh, Flora voor de Nederlandsch West Indische Eilanden*, p. 239.)

44459. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

"Markets of Willemstad, March 9, 1917."

44460. PHASEOLUS VULGARIS L. Fabaceæ.

Common bean.

"*Boonchi pintado*. Markets of Willemstad, March 9, 1917."

44461. RANDIA ACULEATA L. Rubiaceæ.

"*Leele*." A dwarfish, gray-barked West Indian shrub with roundish, shining green leaves; white, solitary, sessile flowers; and globose fruits which yield a fast-blue dye, giving rise to the Jamaica name of *indigo-berry*. Propagation is by cuttings. (Adapted from *Curtis's Botanical Magazine*, vol. 43, pl. 1841, as *Gardenia randia*.)

44462. SESAMUM ORIENTALE L. Pedaliaceæ.
(*S. indicum* L.)

Sesame.

"*Sjosjole*. Markets of Willemstad, March 9, 1917."

44463. PHASEOLUS SEMIERECTUS L. Fabaceæ.

"A leguminous plant, common in lowlands at St. Joris. April 9, 1917."

44464 to 44468. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

44464. *Boonchi di Baliza*. Markets of Willemstad, March 10, 1917.
Edible bean."

44465. "*Boonchi di color* No. 1. Markets of Willemstad, March 9, 1917."

44466. "*Boonchi di color* No. 2. Markets of Willemstad, March 9, 1917."

44467. "*Boonchi di color* No. 3. Markets of Willemstad, March 9, 1917."

44468. "*Boonchi di color* No. 4. Markets of Willemstad, March 9, 1917."

44469. AMARANTHUS PANICULATUS L. Amaranthaceæ. Alegria.

From San Juan Bautista, Tabasco, Mexico. Purchased from Mr. Gabriel Itié, director, Agricultural Experiment Station. Received April 3, 1917.

Alegria is produced in Tlajomulco, Zacoalco, and San Pedro Tlaquepaque, districts belonging to the State of Jalisco. This annual is sown in nurseries; in the month of December it is harvested and is used in the making of sweets. I was told the seeds in question are found with difficulty in the pueblos near Guadalajara, for the inhabitants do not put them to any practical application; and, if they are sometimes used, it is when they are mixed with dulce for children. They are surely very insipid. [These seeds are sold in Mexico City, and] they are also seen in the State of Michoacan, where they are used for the same purpose." (*Itié.*)

44470. FICUS PSEUDOPALMA Blanco. Moraceæ.

From the Philippine Islands. Presented by Dr. E. D. Merrill, acting director, Bureau of Science, Manila. Received April 5, 1917.

"A single fruit of *Ficus pseudopalma*, which apparently has fertile seeds. This fruit was recently sent to me from Corregidor. The species is a most striking ornamental and will probably thrive out of doors in southern Florida and in southern California; it is well worthy of cultivation in greenhouses. The stems are erect, unbranched, and usually about 3 cm. in diameter. The stem is tipped by a dense crown of very characteristic leaves which are sometimes nearly a meter in length. The fruits are borne in the leaf axils. On account of its palmlike aspect Blanco selected the name *pseudopalma*; the common Tagalog name is *niogniogan*, which literally means 'little coconut.'" (*Merrill.*)

44471 to 44473.

From Granada, Spain. Plants purchased from the Pedro Giraud Nurseries, through Mr. Percival Gassett, American consul, Malaga. Received April 7, 1917.

44471 and 44472. FICUS CARICA L. Moraceæ.

Fig.

44471. "*Albanes*, the name by which the *Paharero* fig is here known." (*Gassett.*)

44472. "*Isabeles*, the most delicious fig, much sought after." (*Gassett.*)

44473. PYRUS COMMUNIS L. Malaceæ.

Pear.

Peraleta. A dwarf variety of the common pear.

44474. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Lusambo, Belgian Kongo, Africa. Presented by Mr. E. B. Stilz. Received April 10, 1917.

"Seed of a native watermelon. It grows here like a weed; the vine is almost exactly like that of the cultivated watermelon, only not quite so fuzzy. The fruit also resembles a watermelon, being green and about the size of a man's head when ripe. The rind is very tough and the meat is white and stringy and about as fit to eat as that of a gourd. It has the watermelon smell, however. I do not know whether it is the ancestor or a degenerate descendant of our watermelon." (*Stilz.*)

44475 to 44499. RIBES spp. Grossulariaceæ. Currant.

From Angers, France. Plants purchased from the André Leroy Nurseries.
Received April 11, 1917.

44475 and 44476. RIBES VULGARE Lam. Garden currant.

44475. No. 1. *Belle de St. Gilles.*

44476. No. 3. *De Boulogne blanc.* (Boulogne white.)

44477 to 44480. RIBES NIGRUM L. Black currant.

44477. No. 4. *Cassis à fruit noir.* (Black-fruited currant.)

44478. No. 6. *Cassis à fruit brun.* (Brown-fruited currant.)

44479. No. 5. *Cassis à feuilles dorées.* (Golden-leaved black currant.)

4480. No. 11. *Cassis Royal de Naples.* "Neapolitan. Medium-sized, spicy berries." (*Hesse's catalogue.*)

44481 to 44499. RIBES VULGARE Lam. Garden currant.

44481. No. 12. *Du Caucase.* "Caucasian. Bunches of medium length, currants very large, a prolific shrub. A good table fruit for the home garden." (*Späth's catalogue.*)

44482. No. 14. *Cerise blanche.* (White cherry.)

44483. No. 15. *Chenonceau rouge.* "A good table fruit with large berries." (*André Leroy's catalogue.*)

44484. No. 16. *Commun à fruit blanc.* (Common white fruited.)

44485. No. 17. *Commun à fruit rouge.* (Common red fruited.)

44486. No. 18. *Fay's New Prolific.* "Very long bunches with very large berries." (*André Leroy's catalogue.*)

44487. No. 19. *Fertile d'Angers.* (Angers prolific.)

44488. No. 20. *Fertile de Bertin.* "A heavy-bearing variety with clear red, medium-sized berries." (*Hesse's catalogue.*)

44489. No. 22. *Frauendorf.*

44490. No. 23. *Gloire des Sablons.*

44491. No. 24. *Grosse blanche transparente.* (Large transparent white.)

44492. No. 27. *De Hollande à longue grappe.* (Long-bunch Dutch.)

44493. No. 28. *Impériale blanche.* (Imperial white.)

44494. No. 29. *Impériale rouge.* (Imperial red.)

44495. No. 30. *Knight.* "Knight's red, with very large red berries." (*Hesse's catalogue.*)

44496. No. 31. *La Turinoise.*

44497. No. 35. *Versaillaise.*

44498. No. 33. *Rouge clair de Buddins.* (Bunddins' clear red.)

44499. No. 34. *De Verrières.*

44500 to 44517. Fabaceæ.

From Yih sien, Shantung Province, China. Presented by Rev. R. G. Coonradt. Received April 10, 1917. Quoted notes by Mr. Coonradt.

44500. DOLICHOS LABLAB L. Bonavist bean.

"No. 9. Used for cooking."

44500 to 44517—Continued.

44501 to 44505. *PHASEOLUS* spp.44501 and 44502. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight.
Adsuki bean.

44501. "No. 13. Small red bean; used for soup."

44502. "No. 16. Small white bean; used for boiling."

44503 to 44505. *PHASEOLUS AUREUS* Roxb. Mung bean.

44503. "Hairy green bean; used for soup. Planted in June."

44504. "No. 7. Smooth green bean; used in soup. Planted in June."

44505. "No. 8. Smooth brown bean; used for soup. Planted in June."

44506. *PISUM SATIVUM* L. Garden pea."No. 1. *Wan*; large winter pea. Planted in November."44507 to 44513. *SOJA MAX* (L.) Piper. Soy bean.
(*Glycine hispida* Maxim.)

44507. "No. 2. Large red bean; used for baking or boiling. Planted in the spring."

44508. "No. 3. Large black bean; used for baking and boiling. Planted in the spring."

44509. "No. 4. Large yellow bean; used for baking and boiling. Planted in the spring."

44510. "No. 5. Large blue bean; used for baking and boiling. Planted in the spring."

44511. "No. 11. Small yellow bean; used for oil curd and animal feed."

44512. "No. 12. Tea-colored bean; used for animal feed. Planted in June."

44513. "No. 17. Used for soup."

44514. *STIZOLOBIUM PACHYLOBIUM* Piper and Tracy.

"No. 9. Beans used for cooking."

44515. *VIGNA SESQUIPEDALIS*. (L.) Fruwirth. Yard Long bean.

"No. 10. Horned bean."

44516 and 44517. *VIGNA SINENSIS* (Torner) Savi. Cowpea.44516. "No. 14. Large *Chiang* bean; used for soup and boiling."44517. "No. 15. White *Chiang* bean; used for soup and boiling."44518. *PANICUM SERRATUM* (Thunb.) Spreng. Poaceæ. Grass.

From the Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture, Pretoria. Received April 12, 1917.

"Collected at Kaalfontein, near Pretoria. This grass flourishes on our high veld (4,000 to 6,000 feet) in this neighborhood and is much relished by sheep and cattle." (*Evans*.)44519. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ.

From Augusta, Ga. Plants purchased from P. J. Berckmans Co. Received April 13, 1917.

A rather common tree at low altitudes in the valleys of western China, growing to a height of 15 to 25 m. (50 to 80 feet) and having a trunk often 3 feet in diameter near the base. It has gray bark, massive branches, deciduous leaves, and inconspicuous flowers. The yellow, oval fruits, which are about an inch long, are eaten by the Chinese, who call the tree *Hsuan tsaq*. Known also as *Spondias axillaris*. (Adapted from *Sargent, Plantae Wilsonianae*, p. 172, 1914.)

44520 to 44549.

From Ventimiglia, Italy. Presented by the superintendent, La Mortola Botanic Gardens. Received April 6, 1917.

44520. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.

A shrub or small tree, native to New South Wales, Australia, with compound leaves composed of one to three pairs of shining, oblong or lance-shaped leaflets 2 to 4 inches long, very small flowers in short axillary panicles, and 2 to 3 lobed capsules which inclose globose seeds with fleshy arils. (Adapted from *Gray, U. S. Exploring Expedition*, vol. 15, *Botany*, p. 258, as *Cupania subcinerea*.)

44521. ALECTRYON TOMENTOSUM (F. Muell.) Radlk. Sapindaceæ.

An Australian tree, 20 to 30 feet high, with rusty velvety young branches, small flowers crowded in woolly panicles, and rather hard, depressed, indehiscent fruits. (Adapted from *Bentham, Flora Australiensis*, vol. 1, p. 466.)

44522. ALOE SUCCOTRINA Lam. Liliaceæ.

Aloe.

A succulent herbaceous plant, native to Africa, usually simple but sometimes branched, with thick, linear or lance-shaped leaves with shiny margins and tips, disposed in the form of a rosette, either green or yellowish in color. The red flowers are borne in a spike. The juice is evaporated to obtain a drastic purgative known as *aloes*. This plant is cultivated in South America and many other subtropical places. (Adapted from *Loefgren, Notas sobre as Plantas Exoticas Introduzidas no Estado de S. Paulo*, p. 27.)

44523 to 44530. BERBERIS spp. Berberidaceæ.

Barberry.

44523. BERBERIS ACTINACANTHA Mart.

An evergreen bush, native to the mountainous regions of Chile, with peculiar 5-parted spines, roundish oval, rigid, spiny-dentate leaves, and deep-yellow, sweet-scented flowers. In cultivation it reaches 3 to 4 feet in height and grows freely in a rich sandy loam. (Adapted from *Edward's Botanical Register*, vol. 31, pl. 55.)

44524. BERBERIS GLOBOSA Benth.

A spiny shrub, native to the Andes of Colombia, 6 to 8 feet high, with rigid, mucronate leaves a little more than an inch long and a quarter of an inch wide, yellow flowers a little larger than those of the common barberry, and globular fruits about the size of a small pea. (Adapted from *Bentham, Plantae Hartwegianae*, p. 158.)

44525. BERBERIS GUIMPELI Koch and Bouche.

A shrub, 5 to 7 feet in height, native to the Caucasus, with clustered obovate entire leaves, racemes of early-blooming yellow flowers, and attractive red berries appearing in autumn. It needs a sunny

44520 to 44549—Continued.

situation for best results. (Adapted from *Guimpel, Abbildung der fremden in Deutschland ausdauernden Holzarten*, p. 79, as *B. canadensis*.)

44526. BERBERIS ILICIFOLIA Forst.

A straggling bush, native to Tierra del Fuego, Argentina, about 8 feet in height, with yellow-brown young wood, angular stems, 3-parted often curved spines, dark-green hollylike leaves, flowers in axillary racemes, and deep steel-blue subglobose fruits. (Adapted from *Curtis's Botanical Magazine*, vol. 73, pl. 4308.)

44527. BERBERIS PRATTI C. Schneid.

A western Chinese shrub 6 to 10 feet high, with finely hairy grooved young twigs; slender, 3-parted spines up to two-thirds of an inch long; ovate leaves up to $1\frac{1}{2}$ inches long in fascicles of four or five; yellow flowers in narrow panicles; and ovoid salmon-red fruits a quarter of an inch in length. It grows very freely and is quite hardy in cultivation at Kew, England. (Adapted from *Curtis's Botanical Magazine*, vol. 140, pl. 8549.)

44528. BERBERIS SARGENTIANA C. Schneid.

A black-berried barberry from western Hupeh, China, reaching a height of 7 feet. It is the only evergreen barberry which has proved entirely hardy at the Arnold Arboretum. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 359.)

For further description, see S. P. I. No. 42973.

44529. BERBERIS SUBCAULIALATA C. Schneid.

A thickly branched shrub from Tibet, up to $4\frac{1}{2}$ feet high, with spines up to an inch in length, finely membranaceous, lance-shaped leaves about an inch long, and reddish yellow globular fruits a quarter of an inch in diameter. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 919.)

44530. BERBERIS VIRESCENS Hook. f.

This Himalayan barberry is a spreading shrub with shining brown bark; ovate, pale-green, spiny toothed leaves in tufts; slender 3-parted thorns; small greenish yellow flowers in fascicles or short racemes; and oblong or constricted scarlet or black berries. (Adapted from *Curtis's Botanical Magazine*, vol. 116, pl. 7116.)

44531. BUDDLEIA DAVIDII Franch. Loganiaceæ.

A tall shrub, native to the mountainous parts of northern China, with very variable foliage. The opposite dark-green leaves are 4 inches to a foot in length, oblong or narrowly lance shaped, and either coarsely serrate or entire. The clear lilac-colored flowers are crowded in dense heads 4 to 6 inches long, and the fruits are clavate capsules about a quarter of an inch long. (Adapted from *Curtis's Botanical Magazine*, vol. 124, pl. 7609, as *Buddleia variabilis*.)

44532. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

An Australian tree 30 to 40 feet high, with slender branches, male flowers in slender spikes, and globular fruiting cones not more than a third of an inch in diameter. The wood is dark colored, close grained, and prettily marked. (Adapted from *Bailey, Queensland Flora*, pt. 5, p. 1491.)

44520 to 44549—Continued.

44533. CLERODENDRUM TRICHOTOMUM FARGESII (Dode) Rehder. Verbenaceæ.

A Chinese shrub, 3.5 to 4 meters (10 to 15 feet) in height; with dark-green, oval, lance-shaped leaves, 10 to 15 cm. (4 to 6 inches) long; very fragrant light-pink flowers in axillary cymes; and dark-purple drupes, 4 to 5 mm. (one-fifth of an inch) in diameter, with very hard, black seeds. It is easily raised from seed in ordinary soil. (Adapted from *J. Pinelle, in Revue Horticole, vol. 83, p. 522, as Clerodendron fargesii.*)

44534. ARECASTRUM ROMANZOFFIANUM (Cham.) Becc. Phœnicaceæ.
(*Cocos romanzoffiana* Cham.) Palm.

Var. *plumosa*. "A Brazilian palm, commonly cultivated in Florida and California as an ornamental, with an unarmed trunk about 30 feet high and a foot in diameter, bearing a crown of plumelike pinnate leaves 12 to 15 feet long. It has two spathes, the inner somewhat woody, splitting along one side and exposing the much-branching spadix which is crowned with the monœcious flowers. The fruit is a pale-orange drupe about the size of a large acorn, inclosing a bony seed which has three eyes near the base." (*C. B. Doyle.*)

44535. DIOSPYROS LOTUS L. Diospyraceæ.

A deciduous Chinese tree, usually less than 30 feet high in cultivation in temperate countries, but probably twice as high in warmer climates. It has oval, shining dark-green leaves 2 to 5 inches long, greenish red dioecious flowers, the pistillate solitary and the staminate one to three in a cluster. The purplish or yellowish, orange-shaped fruits are half an inch to three-quarters of an inch across, but because of their astringent quality are unfit for food. On damp days the trees emit a curious heavy odor, probably due to an exhalation from the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 1, p. 494.*)

Ordinarily used in China and Japan as a stock for the kaki, or Japanese persimmon.

44536. DODONAEA THUNBERGIANA Eckl. and Zeyh. Sapindaceæ.

A South African shrub, 5 to 10 feet high, with somewhat viscid, narrow leaves $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long and a quarter of an inch wide, dense racemes of polygamous green flowers, and resinous, shining, winged capsules about half an inch long and wide. A decoction of the root is used as a purgative in fevers. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 242.*)

44537. LONICERA STANDISHII Carr. Caprifoliaceæ. Honeysuckle.

A charming, fragrant, early-flowering, deciduous, Chinese shrub, with pale yellowish brown branches; pale-green, oval to lance-shaped leaves 3 to 5 inches long; and white, sweet-scented flowers appearing in pairs, one-fifth to half an inch long. (Adapted from *Curtis's Botanical Magazine, vol. 94, pl. 5709.*)

44538. PRUNUS CONRADINAE Koehne. Amygdalaceæ. Cherry.

A graceful tree from central China, reaching a height of 25 feet, with oval or oblong, doubly serrate leaves 2 to 6 inches long; whitish or pink flowers about three-quarters of an inch long in two to four flowered umbels and red ovoid fruits one-third to one-half an inch long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2840.*)

44520 to 44549—Continued.

44539. *PRUNUS TOMENTOSA* Thunb. Amygdalaceæ.

Cherry.

A broad, vigorous shrub from northern China. One of the earliest cherries to flower. The flowers are large, with the white petals more or less tinged with red toward the base, and the small, bright-red, slightly hairy fruits are of good flavor. It is now being cultivated in the northwestern part of the United States and in southwestern Canada where other cherries are not hardy. (Adapted from the *Arnold Arboretum Bulletin of Popular Information No. 19, April 25, 1912.*)

This fruiting shrub thrives under a very wide range of climatic conditions, from those of Georgia and southern California to those of Montana and the plains of Canada. Its attractive berries have been used successfully in the production of excellent preserves. Its productiveness, attractiveness, and hardiness make it worthy a place in any dooryard.

44540 to 44546. *ROSA* spp. Rosaceæ.

Rose.

44540 to 44543. *ROSA* spp.

The names given in the following notes are not used as valid for the material that we have, since the seeds received do not agree with seeds of these species received directly from the Arnold Arboretum. The notes are published merely to enable us to hold the information together.

44540. Received as Wilson No. 666, *Rosa helenae*.44541. Received as Wilson No. 666a, *Rosa rubus*.44542. Received as Wilson No. 1125, *Rosa brunonii*.

44543. Received as Wilson No. 1128. This number, Mr. Rehder informs us, is *Sorbus esserteauiana*, and he suggests that the number should have been 1126, *Rosa davidii elongata*.

44544. *ROSA BANKSIAE NORMALIS* Regel.

A climbing bush, 6 m. (20 feet) or more tall, common in western Hupeh and eastern Szechwan, China, from the river level to 1,000 m. (3,250 feet) altitude. It often rambles over trees, and E. H. Wilson has seen trees 50 feet high completely festooned with this rose. The fragrant flowers are always pure white, and the fruits are dull red and abundant. The root bark is used locally for strengthening fishing nets and dyeing them brown. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 317.*)

44545. *ROSA MOYESII* Hemsl. and Wils.

Forma *rosea* Rehder and Wilson. An upright bush, found in western Szechwan, China, up to 3,300 m. (11,000 feet) altitude, growing to a height of 1 to 5 m. (3 to 16 feet), and distinguished from the typical species by its large leaves and large, pale-pink flowers. The large fruits are either dull red or scarlet. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 325.*)

44546. *ROSA RUBUS* Lev. and Van.

A climbing shrub, common everywhere in western Hupeh and eastern Szechwan, China, from the river level to 1,300 m. (4,200 feet) altitude. It is readily distinguished from its near relatives by the densely hairy shoots and leaves. It grows to a height of 2.5 to 4 m. (8 to 13 feet), with dull-red globose fruits. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, pt. 2, p. 308.*)

44520 to 44549—Continued.**44547. VIBURNUM KANSUENSE Batal. Caprifoliaceæ.**

A tall Chinese shrub of loose and open habit, found at altitudes of 6,000 to 9,000 feet. It has oblong leaves, and its juicy, red berries can be used in making agreeable drinks. (Adapted from *note of Frank N. Meyer, May 11, 1915.*)

See also S. P. I. No. 40692 for further description.

44548. VIBURNUM KANSUENSE Batal. Caprifoliaceæ.

A form differing from the preceding number in habit and size.

44549. AMPELOPSIS ACONITIFOLIA Bunge. Vitaceæ.

A very handsome northern Chinese vine with finely divided foliage. The leaves are five parted and 2 to 3 inches long; the inconspicuous flowers appear in summer, and the small orange berries mature in autumn. It should be planted where only a light covering is desired and is hardy in the northern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 278.*)

44550 to 44553. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
 (*Prunus persica* Stokes.)

From Chefoo, China. Presented by Mr. Lester Maynard, American consul general. Received April 5, 1917. Quoted notes by Mr. Maynard.

44550. "No. 4. *Ch'iu t'ao tzü* (autumn peach); grown at Fushanhsien. This is considered one of the best varieties; a-freestone, green skin, white flesh, average weight $7\frac{1}{2}$ ounces to 1 pound; ripens in August."

44551. "No. 5. *Hsieh t'ao* (blood peach); grown at Fushanhsien. The largest peach grown in this district; average weight, $7\frac{1}{2}$ ounces to 1 pound; a freestone; skin and flesh red, flesh hard and dry, very little juice, taste sour; ripens in August."

44552. "No. 6. *Ch'ing p'i lan* (green skin blue); grown at Laiyang. One of the best peaches grown in Shantung, being both sweet and juicy; about the size of *Ch'iu t'ao tzü* [S. P. I. No. 44550], average weight, $7\frac{1}{2}$ ounces to 1 pound, freestone, green skin, white flesh; ripens in September."

44553. "No. 7. *Tung t'ao* (winter peach); grown at Fushanhsien. Considered the best quality of peach grown in this district; about the size of *Ch'ing p'i lan* [S. P. I. No. 44552], average weight, $7\frac{1}{2}$ ounces to 1 pound; freestone, green skin, white flesh; ripens in November."

44554. TAMARIX APHYLLA (L.) Karst. Tamaricaceæ. Tamarisk.
 (*T. articulata* Vahl.)

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received April 12, 1917.

"A tamarisk from the Sahara; a beautiful tree which is very ornamental and produces a gall very much used in the south by the natives for tanning. This gall contains 45 per cent of pyrogallie tannin. It is produced by an acarion, *Eriophyes tlaiae* Trab. I have been able to reproduce it easily on our *Tamarix articulata*. I estimate that an annual harvest of 20 quintals is possible from 1 hectare." (Trabut.)

44555 and 44556.

From Tolga, via Cairns, Queensland, Australia. Presented by Mr. J. A. Hamilton. Received April 12, 1917.

44555. CUCURBITA sp. Cucurbitaceæ.

Melon.

"Chinese pie or jam melon; very productive; the point in its favor is that the seeds are all in one cavity and not embedded in the flesh as in the other preserving melons." (*Hamilton.*)

44556. PASSIFLORA SUBEROSA L. Passifloraceæ.

"Wild passion vine; the flowers are pretty, but I can not say whether the fruit is edible or not." (*Hamilton.*)

44557 to 44561.

From Jerusalem, Palestine. Presented by Mr. E. F. Beaumont, The American Colony Stores, through Mr. Abram I. Elkus, American consul. Received April 17, 1917.

44557. LAWSONIA INERMIS L. Lythraceæ.

Henna.

A handsome shrub, probably native to northern Africa, western and southern Asia, but widely cultivated in tropical countries. The flowers are white, pink, or cinnabar red and are very fragrant. From the leaves is produced the henna or alhenna of the Arabs (cyprus of the ancients), a yellow dye which is used in Egypt and elsewhere by women to color their nails, by men to dye their beards, and for similar purposes. It is the camphire of the authorized version of the Bible. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1830.*)

44558. MEDICAGO CILIARIS (L.) All. Fabaceæ.

Bur clover.

An annual Asiatic plant, growing on the coast and up to 800 m. above sea level, with squarish leaflets; yellow flowers about one-third of an inch long, in few-flowered clusters or solitary; and hairy coiled pods, with six to eight rather loose coils having two rows of awl-shaped prickles on the thick flat margin. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 230.*)

44559. MEDICAGO SCUTELLATA (L.) Mill. Fabaceæ.

Bur clover.

An annual Asiatic herb, 12 to 20 inches high, with rather large oval or oblong, acutely denticulate leaflets, orange flowers, one-sixteenth of an inch long in small clusters or solitary, and smooth, coiled pods, nearly half an inch in diameter, composed of five to six coils. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 227.*)

44560. PISUM FULVUM Sibth. and Smith. Fabaceæ.

Pea.

A slender-stemmed annual, common in rocky places around the eastern Mediterranean countries, about 5 dm. tall, with oval to round, dentate leaflets up to 2 cm. long, rusty yellow flowers, pods 4 cm. long, and velvety black, round peas about 4 mm. in diameter. (Adapted from *Post, Flora of Syria, Palestine, and Sinai, p. 296.*)

44561. PISTACIA TEREBINTHUS L. Anacardiaceæ.

Terebinth.

A medium-sized tree, native to the Mediterranean countries, 12 to 15 m. high, with compound shining leaves having 7 to 11 oblong, caducous leaflets which when bruised give off a strong terebinth odor, hence the name of the plant. The small purple flowers occur in axillary panicles on the previous year's growth; and the fruit is a little, dry, purple drupe which becomes brown when fully mature, is slightly acid and edible. It produces a transparent gum which is used as a chewing gum. The leaves are used as a fodder by the Arabs. (Adapted from *M. Bangol, Bulletin de la Société d'Horticulture de Tunisie, vol. 14, p. 153.*)

44562. Gossypium sp. Malvaceæ.**Cotton.**

From Kribi, Kamerun, West Africa. Presented by Rev. H. W. Grieg, Presbyterian Church Mission. Received April 12, 1917.

Seeds sent in response to a request for a native cotton reported to be used by the Bulus in weaving cloth.

44563. BALANITES AEGYPTIACA (L.) Delile. Zygophyllaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture. Received April 14, 1917.

A tropical African tree, 3 to 5 meters high, with straight, rigid branches; woolly, papery, ovate leaves; green flowers in 3 to 5 flowered cymes; and edible drupes 3 cm. long, with a bitter-sweet flavor. The natives make an intoxicating drink from these fruits, which are also eaten raw with a laxative effect. The seeds yield an oil known as oil of betu, which is used as a liniment, for food, and, to some extent, as a medicine. The wood is hard and close grained, and the bark of the young trees yields a very strong fiber. One of the ingredients of the celebrated spikenard perfume is supposed to have been furnished by this tree. (Adapted from *Post, Flora of Syria, Palestine, and Sinai*, p. 199, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX*, p. 138.)

44564. ZEA MAYS L. Poaceæ.**Corn.**

From Rosario, Argentina. Presented by Mr. William Dawson, jr., American consul. Received April 16, 1917.

"A Rosario landowner who has made extensive experiments with corn recently reported to the Rosario Bolsa de Comercio with respect to the advisability of sowing bitter corn (maiz amargo) which is indorsed in some quarters as locust proof. His recommendations are strongly against this variety. While the locust, unless hard pressed, will not eat the leaves if it finds the plant in flower or grain, it will eat bitter corn as well as any other form. The growth of bitter corn is very slow and requires 9 to 10 months, and even more. With its enormous leaves it exhausts the soil, and after the harvest the hard green stalks make it very difficult to clear the ground, especially in Argentina, where farm labor is costly. Finally, its yield is very small and from 25 to 50 per cent of that which any other common variety of corn will give under similar conditions, to say nothing of the yields obtained from selected seed.

"The landowner mentioned, who makes a specialty of selected seed, states that bitter corn is the only variety that he does not sell. He considers it useful only in the Chaco where 'land is as plentiful as locusts,' and there is little objection to exhausting the soil. Furthermore, in the Chaco the distance between farms is too great to permit an organized defensive campaign against locusts, which under ordinary circumstances respect the leaves of bitter corn." (*Dawson, in Commerce Reports, January 4, 1917, p. 36.*)

44565. MYRISTICA FRAGRANS Houtt. Myristicaceæ.**Nutmeg.**

From Grenada, British West Indies. Presented by Mr. L. F. de Backer, New York City. Received April 16, 1917.

An East Indian tree, 20 to 25 feet high, with smooth grayish brown bark; oval, dark-green, sharp-pointed leaves 3 to 6 inches long, slightly aromatic when bruised; pale yellowish dioecious flowers in axillary racemes; and nearly spherical, pearlike drupes. The flesh of these drupes is yellowish and full of astringent juice, and discloses the oval, hard-shelled, rugged, dark-brown nut. This contains the nutmeg of commerce, an oval, pale-brown seed which soon becomes shriveled and wrinkled. (Adapted from *Curtis's Botanical Magazine*, pls. 2756 and 2757, as *Myristica officinalis*.)

44566 and 44567. AMARANTHUS GANGETICUS L. Amaranthaceæ. Amaranth.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 14, 1917.

44566. "(No. 2383a. Peking, China, February 17, 1917.) A red *Amaranthus*, used locally as a vegetable, like spinach, when young. Sometimes the seed is sown in a moist, dark, and warm place, and the young, red-colored seedlings are eaten as a rare delicacy at feasts. The seed itself is apparently never used in the north of China as a grain food. Chinese name *Hung hsien ts'ai* (red hsien vegetable). (Meyer.)

44567. "(No. 2384a. Peking, China, February 17, 1917.) A green *Amaranthus*, used locally as a vegetable, like spinach, when young. Sometimes the seed is sown in a moist, dark, and warm place, and the young seedlings are eaten as a rare delicacy at feasts. Chinese name *Ch'ing hsien ts'ai* (green hsien vegetable). (Meyer.)

44568. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received April 13, 1917.

A horticultural variety with large fruits, sent under the name of *Annona macrocarpa* Hort.

44569 to 44579.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received April 17, 1917.

44569. APIOS FORTUNEI Maxim. Fabaceæ.

Hodo-imo. Tubers of a perennial leguminous climbing plant, native to Japan, sometimes 10 feet long, with compound leaves having three to five leaflets, panicles of greenish yellow flowers, and pods about 2½ inches long. The round, bulletlike tubers are boiled and eaten, and a kind of starch is manufactured from them. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo, p. 69.*)

44570. CHENOPODIUM ACUMINATUM Willd. Chenopodiaceæ.

Akaza. Seed of an annual Japanese herbaceous plant, growing wild everywhere, and attaining a height of 4 to 5 feet. The large, old stems are used for canes. There are several horticultural varieties, all being used for the same purpose. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo, p. 15.*)

44571. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

Seeds received under the name *Coix agrestis* Lour., which is now considered a synonym of the above. Loureiro describes it as differing from the common form by its simple stems, smooth leaves, and nearly globular seeds. Obtained for the work of the Office of Forage-Crop Investigations.

44572. DIANTHUS JAPONICUS Thunb. Silenaceæ. Pink.

Plants of a glabrous perennial, native of Japan and Manchuria, with simple stems about 20 inches tall, ovate, lance-shaped, sharp-pointed leaves twisted at the base, and red flowers six to eight in a head. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1000.*)

44569 to 44579—Continued.

44573. ELEOCHARIS TUBEROSA (Roxb.) Schult. Cyperaceæ. Beechi.

These beechi tubers are mostly eaten raw, but are also sliced and shredded in soups and in meat and fish dishes. Foreigners in China grate them and serve them boiled as a winter vegetable, in which state they very much resemble sweet corn in looks and taste. The plants need a hot summer to mature and are grown on a muck or clayey soil with several inches of standing water on top, in very much the same manner as wet-land rice. (See S. P. I. No. 41680.)

For illustrations of beechi tubers and growing plants, see Plates I and II.

44574 and 44575. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ.

Loquat.

44574. Motogi-biwa. (Trees.) **44575. Haragami-biwa.** (Trees.)

44576. FICUS PYRIFOLIA Burm. Moraceæ.

Fig.

The name *Ficus pyrifolia* is of doubtful application. These plants may be *F. benjamina*, *F. erecta*, *F. fontanesii*, or *F. rubra*. (See Bailey, *Standard Cyclopedia of Horticulture*, vol. 3, p. 1233.)

44577. MALUS SYLVESTRIS Miller. Malaceæ.

Apple.

(*Pyrus malus* L.)

Nakanaruko. Trees of "a variety of apple known in Japan as the *Iwai* or *Nakanaruko*. This variety is supposed to have come from this country, but it has also been said that it is of German origin. It has become a leading fall variety in Japan." (*J. K. Shaw, pomologist, Massachusetts Agricultural College.*)

44578. PYRUS sp. (?) Malaceæ.

Pear.

44579. ZINZIBER MIOGA Roscoe. Zinziberaceæ.

Roots of a perennial Japanese herb about 3 feet high, both wild and cultivated, with nearly linear, smooth, membranaceous leaves up to 15 inches long; white flowers in spikes 2 to 3½ inches long; and ovoid capsules. In summer and autumn the flowers, with the bracts, are eaten either raw or boiled; they have a slight acid taste and an aromatic odor. (Adapted from *Useful Plants of Japan, Agricultural Society of Japan, Tokyo*, p. 30, and from Bailey, *Standard Cyclopedia of Horticulture*, vol. 6, p. 3544.)

44580. SOLANUM TUBEROSUM L. Solanaceæ.

Potato.

From Bogota, Colombia. Tubers presented by Mr. Jorge Ancizar. Received April 19, 1917.

Papa criolla. Tubers shaped like the common potato, but only about an inch in shortest diameter. "The Creole potatoes come out in three months and are delicious fried with their skins." (*Ancizar.*)

44581 to 44587. RIBES spp. Grossulariaceæ.

Currant.

From Ottawa, Canada. Plants presented by Mr. W. T. Macoun, Dominion Horticulturist, Central Experimental Farm. Received April 20, 1917.

44581. RIBES VULGARE Lam.

Garden currant.

Cumberland. A strong, moderately spreading grower and one of the most productive currants. The bright scarlet fruits are acid, medium sized, of fairly good quality, and occur in bunches of average length, usually only about half filled. The season is medium. (Adapted from Macoun, *Bulletin 56, Central Experimental Farm, Ottawa, Canada*, p. 11.)

44581 to 44587—Continued.**44582. RIBES VULGARE Lam.****Garden currant.**

Large white. A strong, upright, early, productive currant, with pale-yellow, medium to large, briskly subacid fruits in medium to large, half-filled bunches. This currant is better than most in quality. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 14.*)

44583 to 44587. RIBES NIGRUM L.**Black currant.**

44583. Buddenborg. A strong-growing, moderately productive, late black currant, with large to very large, thick-skinned, subacid fruits of good quality and flavor and ripening fairly evenly. One of the largest fruiting varieties and one of the best in quality. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 16.*)

44584. Magnus. A strong-growing and very productive black currant, with large, rather thick skinned, subacid fruits of good flavor and quality, in medium-sized clusters. It is promising because of its productiveness, large size, and good quality. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44585. Eclipse. A rather strong growing, early, productive black currant, with medium to large, rather thick skinned, fairly tender, subacid fruits of good quality. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44586. Eagle. A strong-growing, productive black currant, with mostly large, moderately thick skinned, briskly subacid fruits of medium quality. It ripens somewhat unevenly and is not as good in quality as some others. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 18.*)

44587. Collins' Prolific. A strong-growing, productive Canadian black currant with mostly large, thick-skinned, acid fruits of medium quality, in large bunches. It ripens late and rather unevenly, but is one of the best commercial varieties on the market. (Adapted from *Macoun, Bulletin 56, Central Experimental Farm, Ottawa, Canada, p. 17.*)

44588. DIOSCOREA sp. Dioscoreaceæ.**Yam.**

From Ogbomosho, Nigeria, West Africa. Tuber presented by Dr. George Green. Received April 23, 1917.

The natives plant yams following a good shower in the summer or dry season (November to March). Such a storm usually comes about the end of January. The yams are cut crosswise into sections about 3 inches thick, and these sections are cut longitudinally. Only one piece is planted, about 4 inches deep, in each of the hills or heaps, which are about 3 feet in diameter, 2 feet in height, and 4 feet apart. A tuft of grass is placed on top of the hill to protect the planted yam from the sun, and soil is thrown on to prevent the wind blowing the grass away. The vines are supported by stout sticks or often by broken cornstalks. Yams require about six months to mature, those planted in January being ready for digging in July. Yams may be left in the ground for a week or two after the vines have died down. (Adapted from *note by Dr. Green.*)

44589 and 44590.

From Siena, Italy. Presented by Dr. Agilulfus Preda, director, Botanic Garden, University of Siena. Received April 23, 1917.

44589. CORNUS CAPITATA Wall. Cornaceæ. Bentham's cornel.

A deciduous or partially evergreen tree, native to the Himalayas and China, 30 to 40 or more feet high. of bushy habit, with opposite, leathery leaves 2 to 5 inches long and minute, inconspicuous flowers crowded in hemispherical masses about half an inch wide. The beauty of the inflorescence is in the four or six creamy-white or sulphur-yellow bracts which are about 2 inches long. The fruit forms a fleshy, strawberry-shaped crimson head a little more than an inch wide. The beauty of the flower bracts and of the fruits makes this an excellent ornamental. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 387, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 855.)

"This species is now fruiting at several places in California, notably in the Golden Gate Park, at Niles, and at Palo Alto." (*Fairchild*.)

See S. P. I. No. 42597 for previous introduction.

44590. PTEROCARYA FRAXINIFOLIA (Lam.) Spach. Juglandaceæ.
(*P. caucasica* Meyer.)

A large, spreading, ornamental tree, native to western Asia, growing to a height of 60 feet, with compound leaves 8 to 15 inches long, composed of 11 to 25 serrate leaflets; monœcious flowers in catkins; and small, 1-seeded, winged nuts. It is hardy as far north as Massachusetts, but needs some protection when young. Although it thrives best in rich, moist soil, it will grow well in drier localities. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2583.)

44591 to 44595. STYRAX spp. **Styracaceæ.** **Storax.**

From Orleans, France. Plants purchased from Messrs. Léon Chenault & Sons. Received April 23, 1917.

44591. STYRAX CALIFORNICUM Torr.

An upright, branching shrub, usually about 6 feet high, with broad oval leaves from 1 to 2½ inches long; whitish flowers in mostly 3-flowered racemes; and 1-seeded fruits. It is native to the Sacramento Valley in northern California and is the most northern species of the genus. It bears a strong resemblance to *Styrax officinale* of southern Europe, from which it differs by its fewer flowered racemes and thickened pedicels. (Adapted from *John Torrey*, in *Smithsonian Contributions to Knowledge*, vol. 6, p. 4.)

44592. STYRAX DASYANTHUM Perkins.

A deciduous shrub or small tree, native to central China, with broadly oval or obovate pointed leaves 2 to 4 inches in length, and white flowers one-half to three-quarters of an inch long, produced in July in slender terminal racemes. It has proved hardy in the vicinity of London, England. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 557.)

44593. STYRAX OFFICINALE L.

An ornamental shrub or small tree, with broadly oval or ovate leaves 1 to 3 inches long; white, fragrant flowers appearing in June in short, terminal, few-flowered clusters; and roundish fruits; a native of Greece and Asia Minor at altitudes up to 3,600 feet. The fragrant resin known

44591 to 44595—Continued.

as storax is obtained from this shrub by bruising the stem. Hardy in the southern United States. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, pp. 559, 560, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 6, p. 3280.)

44594. STYRAX VEITCHIORUM Hemsl. and Wils.

A small tree, 12 to 15 feet high, with lanceolate, taper-pointed, thin, downy leaves, 3 to 5 inches long; and slender panicles of white flowers nearly an inch across, produced in groups at the ends of shoots from the uppermost leaf axis. Native to central China. It is hardy at Veitch's Nursery, Coombe Wood, England. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 560.)

44595. STYRAX WILSONII Rehder.

A very ornamental deciduous shrub, native to western China, 6 to 10 feet high, twiggy and much branched, with ovate, green leaves half an inch to an inch long, usually entire, but sometimes with the ends three lobed or sparsely toothed. The solitary, nodding flowers are pure glistening white, five-eighths to three-quarters of an inch wide, produced in June on short stalks from the leaf axils. The shrub is remarkable in that it begins to flower when only a few inches high and 2 or 3 years old. It is probably hardy as far north as Philadelphia. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 560, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 6, p. 3279.)

44596. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.

(*P. juliflora* DC.)

Algaroba.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received April 19, 1917.

"Late-fruiting black and white *Algarobas* from the district at the junction of the Provinces of Salta, Catamarca, and Tucuman." (*Damon.*)

See S. P. I. Nos. 44434 and 44435 for previous introduction and description of the black and white varieties of the *Algaroba*. This introduction is a mixture of the two.

44597 to 44599. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

From Japan. Presented by Rev. Christopher Noss, Wakamatsu, Iwashiro, Japan. Received April 23, 1917.

"Under date of November 24, 1916, you asked that I should obtain for you a quantity of the *Hato-koroshi-daizu* soy bean for experimental planting. I inquired at Kawamata, the town where I first found this variety, and asked our Japanese pastor to make a thorough search. No one could be found who knew anything about a bean called *Hato-koroshi-daizu* or who could exactly match the sample. Finally the pastor sent me 6 quarts of a variety which, he said, seemed to be about the same. This variety is called *Uba-no-kantsu-bushi* (nurse's mastication), referring to its flattened shape, as though mashed between the teeth of a nurse for a little child. (Japanese mothers and nurses are accustomed to masticate food that is hard before feeding it to their little ones.)

"I appealed to another of my Japanese workers, who is a graduate in agriculture and has served the Government as an agricultural expert. He undertook



BEECHIS AS THEY ARE SOLD IN THE CHINESE MARKETS.

(*Eleocharis tuberosa* (Roxb.) Schult., S. P. I. No. 44573.)

These beechis, water nuts, or water chestnuts, as the underground bulblike rootstocks of this sedge are variously called, form the most tender and palatable part of the Chinese chop suey and have a flavor suggestive of coconuts. They are sold either as gathered (as shown at the right) or peeled and strung on bamboo sticks (at the left). In the latter form they cost 1 to 3 cents (Mex.) per stick. While they are usually eaten raw, they are sometimes steamed. When grated they are said to form an excellent substitute for sweet corn. (Photographed by F. N. Meyer, Changsha, Hunan Province, China, May 16, 1917; P12398FS.)



A BEECHI POND NEAR CANTON.

(*Eleocharis tuberosa* (Roxb.) Schult., S. P. I. No. 44573.)

The culture of the beechi in South China forms an important plant industry, which is peculiar in that it utilizes shallow ponds made for the purpose. The bulblike rootstocks are planted close together on the bottom of the pond and a few inches of water turned on them, and as their slender grasslike stems grow the water is deepened. After six months or so the water is drained off and the rootstocks are dug from the mud. The possibility of utilizing this plant on certain of our undrained lands in the extreme South should make its preliminary trial worth while. (Photographed by David Fairchild, Canton, China, December, 1901; negative No. 0.504.)

to find the bean for me and made one special trip to look it up. He, too, reported that he could not find *Hato-koroshi-daizu*, and that the variety which seemed to be identical with it was in his district called *Shiroishi* (white stone, the name of a noted river in northern Japan). Of this variety he sent me about 4 quarts, which he said was all that he could find.

"I wrote to the chief agricultural school in my province and to the leading seedsman of Sapporo, the place from which we generally buy seeds for use in the north, and could find no trace of *Hato-koroshi-daizu*.

"I judge that the bean must have come from the south." (Noss.)

44597. From Wakamatsu.

44599. From Kawamata.

44598. From Odaka.

44600 to 44606. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Port of Spain, Trinidad, British West Indies. Cuttings presented by Mr. J. de Verteuil, Superintendent of Field Experiments, Department of Agriculture. Received April 27, 1917.

Introduced for the Sugar Experiment Station, New Orleans, La.

44600. *Badilla* (New Guinea No. 15).

44601. *B-3922*.

44604. *B-6450*.

44602. *B-4934*.

44605. *B-6835*.

44603. *B-6308*.

44606. *Ba. 6032*.

44607 to 44609. CORYLUS AVELLANA L. Betulaceæ.

Filbert.

From Angers, France. Plants purchased from Mr. Charles Détriché. Received April 11, 1917.

44607. *Geante des Halles*.

44609. *Prolifique à coque serrée*.

44608. *Barcelona*.

For illustrations showing a fruiting branch and a growing tree of the Barcelona filbert, see Plates III and IV.

44610. MAMMEA AMERICANA L. Clusiaceæ.

Mamey.

From New Orleans, La. Obtained in the market by Mr. C. V. Piper, of the Department of Agriculture. Received April 20, 1917.

A large, and unusually handsome West Indian tree of erect, compact habit, with glossy, dark-green, leathery leaves, fragrant white flowers, and globose russet fruits 3 to 6 inches in diameter. The tree is widely cultivated for its edible fruits, which are eaten raw or cooked, the flavor suggesting that of the apricot. They have a thick leathery rind and firm yellow flesh inclosing several large seeds.

44611 to 44622. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From the Philippine Islands. Presented by Mr. Adn. Hernandez, director, Bureau of Agriculture, Manila. Received April 25, 1917.

The following varieties were grown at the Alabang Stock Farm Station, Alabang, Rizal, P. I., and were imported for experimental purposes for the sugar experiment station, New Orleans, La.

44611 to 44622—Continued.

"*Hawaii No. 20* and *Louisiana Striped* are the most extensively cultivated varieties of sugar cane in the Philippines. The yield per hectare (2.47 acres) in cane and the sugar content of these varieties is about 100 metric tons and 13 per cent, as compared with the yield of the best Philippine variety (*Negros Purple*), 80 metric tons per hectare and a sugar content of 14 per cent." (*Wester, Food Plants of the Philippines.*)

44611. *Chenois.*44614. *Hawaii 20* × *Hawaii 309.*44612. *Hawaii 20.*44615. *Hawaii 27* × *Hawaii 309.*44613. *Hawaii 20.*44616. *Java 247.*

44617. *Lahaina.* "Long straight leaves of light color; rapid grower, deep rooting; hard rind when mature; superior richness of juice; firm, compact fiber, making the trash easy to handle." (*Deerr and Eckart, Bulletin 26, Hawaiian Sugar-Planters' Association Experiment Station.*)

44618. *Lahaina* × *Yellow Caledonia.*44619. *Louisiana Striped.*44620. *Louisiana Striped* × *Lahaina.*44621. *New Guinea 15, or Badilla.*44622. *Yellow Caledonia.***44623 and 44624. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**(*Sechium edule* Swartz.)**Chayote.**

From Sydney, New South Wales, Australia. Fruits presented by Mr. George Valder, director, Department of Agriculture. Received June 30, 1917.

"The two varieties grown in New South Wales." (*Valder.*)

44623. White variety.

44624. Green variety.

44625 to 44628. PERSEA AMERICANA Mill. Lauraceæ. Avocado.(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April to June, 1917.

44625. "(Nos. 111, 121, 139. Avocado No. 18.) *Panchoy*.² "This is a very thick skinned fruit of unusually good quality. It is rather above medium size, weighing 15 to 18 ounces, and is of pleasing form—broadly obovoid. Perhaps its most striking characteristic is its unusually thick skin; but its quality deserves even more notice, for in this respect it is one of the very best in the collection. The seed is small.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. The altitude is approximately 5,100 feet. The ground beneath the tree is planted in coffee bushes, which are now about 8 feet high. The soil is rich sandy loam, friable, black, and fertile. The tree is about 45 feet high, with a straight trunk 18 inches

² This and other varietal names for Mr. Popenoe's Guatemalan avocados are arbitrarily selected from appropriate words in the Maya language, the language of one of the most remarkable races of Central America, whose ruins and agricultural practices show it to have been peculiarly an agricultural race. It seems entirely fitting that to this race should be given the credit for first appreciating this distinct type of avocado, and no better way could be found than that of attaching to these varieties Maya names which some day may be as commonly used as *Bartlett* pear or *Baldwin* apple are used to-day in sections of this country. Furthermore, the names will indicate the Guatemalan origin of these plants as English names could not.



A FRUITING BRANCH OF THE BARCELONA FILBERT.

(*Corylus avellana* L., S. P. I. No. 44608.)

In the State of Washington thus far the Barcelona filbert seems to have led in productivity. The branch shown was cut from a young plant growing at the Yarrow Plant-Introduction Field Station, Rockville, Md. In one orchard of the Du Chilly and Barcelona varieties, near Vancouver, Wash., 80 trees of the Barcelona bore as many nuts as 240 of the Du Chilly, showing the importance of testing all the European varieties in America. Prof. A. A. Quarnberg, of Vancouver, Wash., has just returned from an inspection of the filbert orchards of Europe and has introduced several new varieties. (Photographed by R. C. Traver, Photographic Laboratory, August 8, 1917; P20790FS.)



A YOUNG TREE OF THE BARCELONA FILBERT.

(*Corylus avellana* L., S. P. I. No. 44608.)

Felix Gillette, of Nevada City, Calif., was a pioneer in the introduction of the filbert into the Pacific coast region. His collection of varieties, to which the Bureau of Plant Industry contributed, was maintained for some time after his death. From it, Prof. A. A. Quarnberg, of Vancouver, Wash., obtained some of the first plants of his filbert collection, which is now the most extensive one in this country. The increasing interest in filbert growing in the State of Washington makes this historical photograph of the beginning of the industry worth publishing. (Photographed by David Fairchild, at Nevada City, Calif., 1904; P1493FS.)



NUMBERING A SELECTED AVOCADO TO AVOID ERRORS IN CUTTING BUD WOOD.

(*Persea americana* Mill., S. P. I. No. 44625.)

This tree is the Panchoy seedling, Mr. Popenoe's selection No. 18. It is one of the excellent varieties found in Guatemala. Mr. Popenoe employed the method of cutting a number in the bark to mark his selected seedling trees. This enabled him to cut several lots of bud wood at different times from the same tree in the forest. (Photographed by Wilson Popenoe in the finca La Polvora, Antigua, Guatemala, May 3, 1917; P17215FS.)



A GUATEMALAN GIRL HOLDING A CLUSTER OF TUMIN AVOCADOS.

(*Persea americana* Mill., S. P. I. No. 44627.)

This variety, the Tumin, is now being propagated in Florida and California from bud wood obtained by Mr. Popenoe from the tree which yielded the fruits shown here. The Tumin avocado is unusually productive, its fruits growing in clusters of two to six. These fruits resemble closely in form the Trapp variety, weigh about a pound, and have a smooth, glossy, purple-black skin. They are of good quality. (Photographed by Wilson Popenoe, Antigua, Guatemala, February 24, 1917; P17112FS.)

44625 to 44628—Continued.

thick at the base, giving off its first branch 18 feet from the ground. The crown is not very broad, but open and sparsely branched, some of the limbs showing a tendency to droop. The age of the tree is not definitely known, but it is probably 15 to 20 years. The character of bud wood produced by the tree is fairly satisfactory; the growths are short, but the buds are well formed and show no tendency to drop.

"Lacking a definite test in the United States, it must be assumed that the variety is about average in hardiness. The climate of Antigua is not sufficiently cold to demonstrate the hardiness of a variety.

"The flowering season is February and March. The fruit ripens rather early for this region, the first ones commencing to drop in February, while a few hang on until April or May. The season may be called January to April. This rather early season of ripening is of especial importance to California, and the variety should be given a careful trial in that State. The productiveness of the variety is satisfactory. The crop which ripened in the spring of 1917 was good, but few fruits were set from the blooms of 1917. This is nothing unusual, since the Guatemalan race of avocado does not as a rule bear heavily every year.

"The fruit is broadly obovoid, 1 pound in weight, round and yellowish green on the surface, with a skin almost as thick as a coconut shell, but easily cut. The flesh is almost as yellow as butter, clean and free from discoloration, and of very rich flavor, while the seed is comparatively small and tight in the cavity. The variety has every appearance of being an excellent one.

"The fruit may be formally described as follows: Form obovoid, slightly oblique at the apex; size above medium to large, weight 15 to 18 ounces, length $4\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ inches; base rounded or obscurely pointed; stem stout, 4 inches long, inserted obliquely without depression; apex obliquely flattened, depressed around the stigmatic point; surface heavily pebbled to rough, green to yellowish green in color, with numerous small, rounded, yellowish dots; skin thick, about one-eighth of an inch throughout, not thicker toward the apex than near the base, as in many avocados, woody, very brittle; flesh firm, smooth, rich yellow in color, tinged with green near the skin, fiber or discoloration entirely lacking, the flavor very rich and pleasant; quality excellent; seed medium sized or rather small, roundish conic in form, weighing 2 ounces, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

For an illustration of the Panchoy avocado, see Plate V.

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 127, fig. 23; reprint, 1918, p. 25, fig. 23; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 54, pl. 17.

44626. "(Nos. 112, 119, 141. Avocado No. 21.) *Benik*. This is a very handsome fruit of fine quality. When cut in halves the contrast of its purplish maroon skin with its rich yellow flesh is very attractive, the purple of the skin intensifying the yellow of the flesh. The tree is a good bearer, and the variety seems well worthy of a trial in the United States.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. It has recently been girdled, with the intention of killing

44625 to 44628—Continued.

it to make room for more coffee bushes, so that it will probably not be in existence a year hence. The altitude here is about 5,100 feet. The tree stands among coffee bushes, many of which grow beneath its branches. The soil is a loose sandy loam, deep and fertile. The tree is about 35 feet high, the trunk 18 inches in diameter at the base, and the first branches 12 feet from the ground. The crown is round, dense, of good form, but high above the ground. The age of the tree is not known, but it would appear to be at least 20 years. The growth is vigorous and shapely, though the branchlets are rather short. The bud wood furnished by the tree is quite satisfactory, the eyes being well developed and not losing their outer bud scales or falling early. The bud sticks, however, are short.

"The hardiness of the variety must be considered about average until the facts can be ascertained by a test in the United States. Antigua is not cold enough to show up the hardiness of an avocado of the Guatemalan race.

"The tree flowers in late February and March. It ripened a fairly good crop of fruit in 1917 from the 1916 blooms, and set a very heavy crop to ripen in 1918. Its productiveness, therefore, seems to be above the average. The season of ripening is from February, when the fruits change from green to purple and thus indicate their maturity, to May, when the last fruits fall to the ground. It is a midseason sort, commencing to ripen a trifle earlier, perhaps, than the average.

"The fruit is broadly obovoid to pear shaped, about 20 ounces in weight, with a rough surface of rich purplish maroon color. It presents a very attractive appearance. The skin is rather thin and somewhat pliable, but coarsely granular in texture. The flesh is rich cream yellow in color, free from discoloration, and of very rich, pleasant flavor. The seed is medium sized and tight in the cavity.

"A formal description of the fruit is as follows: Form broad pyriform to obovoid; size very large, weight 20 ounces, length 5 inches, greatest breadth $3\frac{3}{4}$ inches; base pointed, the stem inserted obliquely without depression; apex rounded, slightly depressed immediately around the stigmatic point; surface pebbled to rather rough, deep purplish maroon in color, almost glossy, with few inconspicuous, light-colored dots; skin rather thin for this race, about one-sixteenth of an inch throughout, fairly pliable and peeling from the flesh when fully ripe, the purplish maroon color of the surface extending clear through the skin; flesh rich cream yellow in color, changing to pale green close to the skin, firm, of rich flavor; quality excellent; seed medium sized, weighing about 3 ounces, roundish conical, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 129, fig. 25; reprint, 1918, p. 25, fig. 25; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 57, pl. 18.

44627. "(Nos. 113, 120, 140, 163, 225. Avocado No. 20.) *Tumin*. This variety is remarkable for its unusual productiveness, the fruits often being borne in clusters of two to five, a characteristic which is quite rare in the Guatemala race. The fruit is almost identical with the Florida *Trapp* in form; it weighs almost a pound, and is of handsome appearance, with a smooth, glossy skin of purple-black color. The

44625 to 44628—Continued.

flesh is of excellent appearance and flavor. The seed is medium sized. Taken all around, this seems a very promising variety, especially for Florida, where many of the Guatemalan avocados do not bear heavily.

"The parent tree is growing in the finca La Polvora in Antigua, Guatemala. The altitude is approximately 5,100 feet. On all sides of the tree, and crowding it somewhat, are large coffee bushes. The soil is a rich, sandy loam of volcanic origin, deep and friable. The tree is probably 6 or 7 years old. It is 20 feet in height, very slender in habit, the trunk 6 inches through at the base, branching at 8 feet from the ground. The crown is slender, sparsely branched, with very little fruiting wood. Its growth seems to be reasonably vigorous, the young branchlets being stout, though very short. The wood is rather brittle. The bud wood furnished by this tree is rather poor, owing to the shortness of the growths and the fact that the buds are too closely crowded together. The eyes, however, are well formed and show no tendency to drop and leave a blind bud. It may be found that the tree will require training when young to keep it stocky and of good form.

"The hardiness of the variety can not be ascertained at present, since the climate of Antigua is not cold. It may be assumed, until a test is made in the United States, that it is about as hardy as the average of the Guatemalan race.

"The tree did not flower in 1917, owing, quite likely, to the heavy crop which it ripened from the 1916 blooms. Probably under better cultural conditions and by thinning heavy crops greater regularity in bearing can be induced; in Guatemala, where no cultural attention is given to the trees, it is common for them to bear very heavily one season and fail to bear the next. Judging by the appearance of the spring flush of growth, which always accompanies the flowers, the variety will flower here in March. The fruits ripen from March to May. Although the tree has very little fruiting wood, it produced 125 fruits in 1917, which can be considered a very heavy crop. Several of the branches, in fact, were broken by the weight of the fruits they were carrying.

"The form of the fruit, as already mentioned, is practically the same as that of the *Trapp*—oblate or roundish oblate. The average weight is 12 to 16 ounces, but it may be expected that the weight of this and all other varieties in the collection will be slightly greater under good culture in the United States than it is in Guatemala, where the trees receive no attention. The skin is rather thin and smooth on the surface. The color is a deep purple, almost black. Unlike most Guatemalan avocados, the surface possesses a decided glossiness. The flesh is rich yellow in color, free from discoloration or fiber, and of very rich flavor. The seed varies from small to slightly large. In this connection it may be noted that the seeds of round or oblate avocados frequently are found to vary considerably in size, even among the fruits of a single tree. In this particular variety the average is not large, but occasional fruits were found in which the seed was a trifle too large. In others it is comparatively small. It is always tight in the cavity.

"The following is a formal description of the fruit: Form roundish oblate or oblate; size medium to above medium; weight 12 to 15 ounces. length $3\frac{1}{4}$ inches; greatest breadth $3\frac{3}{8}$ to $3\frac{5}{8}$ inches; base rounded,

44625 to 44628—Continued.

the very short, stout stem inserted without depression and almost squarely; apex flattened, not depressed; fruits borne singly or in clusters of two to six; surface almost smooth or very lightly pebbled, deep purple in color, glossy, with very numerous minute yellowish dots; skin thin for this race, one-sixteenth of an inch at apex and slightly less toward the base of the fruit, pliable, peeling readily; flesh firm, smooth, rich cream yellow changing to pale green near the skin, free from fiber or discoloration, and of rich, pleasant flavor; quality excellent; seed roundish oblate, variable in size, weighing $1\frac{1}{4}$ to 3, commonly 2, ounces, tight in the cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 128, fig. 24; reprint, 1918, p. 25, fig. 24; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 55.

For an illustration of fruits of the Tumin avocado, see Plate VI.

44628. "(No. 114. Avocado No. 19.) *Hunapuh*. From the finca La Polvora in Antigua, Guatemala. Altitude approximately 5,100 feet.

"A fruit of large size and attractive appearance, with a comparatively small seed. The quality, while fairly good, did not seem to be up to the standard of those included in the Guatemalan collection, hence the variety is not recommended for general distribution with the rest. However, on the possibility that it may prove to be of better flavor when grown under more favorable conditions, bud wood has been sent in for trial at the Plant Introduction Garden, Miami, Fla., and perhaps at one or two places in California.

"Form obovoid to ovoid; size extremely large, weight $1\frac{1}{2}$ to $1\frac{3}{4}$ pounds, length 5 to $5\frac{1}{4}$ inches, greatest breadth 4 inches; base rounded, the very short, stout stem inserted without depression, slightly oblique; apex rounded, very slightly depressed close to the stigmatic point; surface almost smooth to lightly pebbled, dull purple in color, with numerous minute yellowish dots; skin thick, one-eighth of an inch toward the apex of the fruit, slightly less near the base, coarsely granular, brittle; flesh firm, creamy yellow in color, changing to pale green near the skin, free from fiber and with very slight discoloration, the flavor pleasant but not very rich; quality fair to good; seed oblong conic, rather small, weighing 2 ounces, tight in the seed cavity, with both seed coats adhering closely; season early to midseason or rather late, February to June." (*Popenoe*.)

44629 to 44637. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Genoa, Italy. Obtained through Mr. David F. Wilber, American consul general. Received April 26, 1917.

Seeds of the following varieties of peaches were obtained in response to a request from Mr. W. F. Wight, of the Office of Horticultural and Pomological Investigations, for botanical study and breeding experiments.

44629. *Bascina di Polcevera* (from Cesino). August.

44630. *Bascina di Polcevera* (from Livellato). August.

44631. *Gialla di Cesino* (Cesino Yellow). August.

44629 to 44637—Continued.

44632. *Gialla Grigui* (Yellow Grigui from S. Cipriano). August.

44633. *Grigui* (from S. Cipriano.) Early.

44634. *Rossa Bascina Tardiva* (Late Bascina from Maneseno, S. Cipriano, Vallee Calda).

44635. *Rossa Combi di Comago* (Red Combi from Comago). Early.

44636. *Rossa Tardiva Grigui* (Late Red Grigui from S. Cipriano).

44637. *Trionfo Primaticcia* (Early Triumph). "Light yellow pulp, fruit maturing in June. Tree large and prolific." (*Fratelli Ingegnoli, Catalogo Generale, 1914, p. 79.*)

44638 to 44648. RIBES spp. Grossulariaceæ.

From Saonara (Padua), Italy. Plants purchased from Fratelli Sgaravatti. Received April 26, 1917.

44638 to 44640. RIBES NIGRUM L.**Black currant.**

44638. *Cassis Gialla*. "Medium-sized fruit, yellowish brown." (*Sgaravatti catalog.*)

44639. *Neapolitana (Bang Up)*. A strong-growing, moderately productive black currant, with rather large fruits in medium-sized bunches. The flavor is briskly subacid, and the quality a little above the average. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44640. *Regina Vittoria. (Victoria.)* A rather vigorous, moderately productive, rather late black currant, with large or very large thick-skinned subacid fruits in large bunches. The quality is good, but the fruit ripens somewhat unevenly. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44641 to 44648. RIBES VULGARE Lam.**Garden currant.**

44641. *Bella di Versaglia rossa* (red). "Long bunches, fruit large." (*Sgaravatti catalog, October, 1908.*)

44642. *Bella di Versaglia bianca* (white). "Long bunches, fruits large." (*Sgaravatti catalog, October, 1908.*)

44643. *Carnea*. "Red, lax." (*Sgaravatti catalog, October, 1908.*)

44644. *Ciliegia a frutto rosso* (red-fruited cherry).

44645. *D'Ollana bianca* (White Dutch). A moderately productive, fairly vigorous, white currant with uneven, pleasantly acid fruits in large, well-filled bunches. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44646. *D'Ollana rossa* (Red Dutch). A vigorous, spreading, very productive red currant with small to medium-sized acid fruits in large bunches. (Adapted from Macoun, *Bulletin 56, Central Experiment Station, Ottawa, Canada.*)

44647. *Grossa bianca de Werder* (Werder's large white).

44648. *Grossa perla rossa* (large pearl red).

44649 to 44657. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Palermo, Italy. Obtained through Mr. Samuel H. Shank, American consul. Received April 25, 1917.

These peach varieties were sent in response to a request for peach seeds for the botanical studies and breeding experiments of the Office of Horticultural and Pomological Investigations.

44649. *Fragolara*. From the Macchiarelle estates. Early.

44650. *Fragolara selvatica*. From garden at Bagheria.

44651. *Manilina*. From Passo di Rigano, near Morano. Early.

44652. *Manilina*. From garden of Rossi Ignacio. Early.

44653. *Pesca agostina* (August peach). From garden at Trabia. Good quality. Native name *Servaggia tardia* (late servaggia).

44654. *Pesca Martorana*. From garden at Trabia. Good quality.

44655. *Pesca Martorana*. From garden at Ficorotti, near Macchiarelle.

44656. *Rossa Martorana* (red Martorana). From gardens at Macchiarelle and Ficorotti.

44657. *Settembrino* (September). From Scillata. Collected by Prof. Accarati.

44658 and 44659. ROLLINIA MUCOSA (Jacq.) Baill. Annonaceæ. Biribá.

From Para, Brazil. Presented by Dr. J. Simão da Costa. Received April 26, 1917.

Two separate packages. "I can not assert that they are different varieties, but the outward appearance of the fruits from which they were extracted was so different that I thought I would send them separately." (*Da Costa*.)

A small tree, with oblong, pointed leaves and compound, fleshy fruits with glabrous tubercled skins and edible, viscous pulp of rather poor flavor; it resembles the common custard-apple, *Annona reticulata*, in habit. Native of the island of Martinique, French West Indies. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2975.)

44658. No. 1.

44659. No. 2.

44660 to 44670.

From Nanking, China. Presented by Prof. Joseph Bailie, of the University of Nanking. Received April 27, 1917.

44660. *ACER BUERGERIANUM* Miquel. Aceraceæ. Maple.
(*A. trifidum* Hook. and Arn., not Thunb.)

"Collected in open land, Nanking, December, 1916. Chinese name *Ya fêng* (forked maple)." (*Bailie*.)

A large tree, with glabrous branches, 3-lobed, bright-green, papery leaves with entire margins; inconspicuous greenish flowers appearing at the same time as the leaves; and glabrous fruits up to 2 cm. (four-fifths of an inch) in length. (Adapted from *Koidzumi, Journal of the College of Science, Imperial University of Tokyo*, vol. 32, pt. 1, p. 29, pl. 17.)

44660 to 44670—Continued.

44661. ALEURITES FORDII Hemsl. Euphorbiaceæ.

Tung-oil tree.

Collected on a mountain, Chekiang, November 14 to 30, 1916. Chinese name *Yu t'ung*." (Bailie.)

"A rapid-growing, broad-leaved deciduous tree which attains a height of 25 to 35 feet. It is said to be comparatively short lived. Clusters of pinkish white flowers are produced just as the leaves begin to come out in the spring and are followed by green or reddish fruits somewhat larger than the fruit of the black walnut. The fruits contain the large nutlike oily seeds from which tung oil, a valuable drying oil, is expressed. The oil constitutes about 24 per cent (by weight) of the seeds, or about 40 per cent of the kernels from which the shells have been removed. The tree appears to be particularly well adapted to the sandy clay soils and climate of northwestern Florida and the adjacent regions of Alabama and Georgia." (R. A. Young.)

44662. QUERCUS sp. Fagaceæ.

Oak.

"From Anhwei, November 14 to 30, 1916. Collected by students of Nanking University." (Bailie.)

44663. CASTANOPSIS SCLEROPHYLLA (Lindl.) Schottky. Fagaceæ.

(Quercus sclerophylla Lindl.)

"From grave land on a mountain, Chekiang, November 14 to 30, 1916. Obtained from natives by students of the university. Chinese name *K'u chu tzü* (bitter acorn)." (Bailie.)

An evergreen tree 25 to 65 feet tall, growing in the woods of Hupeh and Chekiang, China, at altitudes up to 1,500 m. (5,000 feet). It is a handsome tree with nearly smooth, dark-gray bark and a densely branched flattened crown. The natives gather the nuts and crush them, making an edible paste resembling bean curd in appearance and the chinkapin in flavor. (Adapted from Sargent, *Plantae Wilsonianae*, vol. 3, p. 201.)

44664. CATALPA BUNGEI Meyer. Bignoniaceæ.

"From open land, Chekiang, China, November 14 to 30, 1916. Chinese name *Tzû*." (Bailie.)

A quick-growing Chinese tree, up to 100 feet in height, with a trunk 10 to 15 feet in circumference a few feet above the ground. The wood, which is strong, light, durable, and nonwarping, resembles walnut to a large extent and is in much demand for fine furniture. The tree might be cultivated in the semiarid sections of the United States where the winters are not too severe. It prefers a porous soil and is easily propagated from suckers which spring up from the roots that are near the surface of the ground. (Adapted from a note of Frank N. Meyer under S. P. I. No. 38254.)

44665. BELIS LANCEOLATA (Lamb.) Sweet. Pinaceæ.

(Cunninghamia sinensis R. Br.)

"Collected on a mountain, Chekiang, November 14 to 30, 1916. Chinese name *Shan shu* (pine tree)." (Bailie.)

"This handsome tree is found all over the temperate parts of China from sea level up to 2,000 m. altitude, but does not occur where the winters are severe. It is abundant in Fukien, Hunan, Hupeh, and more especially in western Szechwan, where it is partial to red sandstone and forms pure forests. The trunk is mastlike; and the branches are

44660 to 44670—Continued.

numerous, slender, short, and horizontally spreading, giving a lax pyramidal appearance to the tree. The leaves, usually dark green above, are frequently more or less glaucescent. After trees are felled sprouts spring from the old stumps and develop into new trees. This peculiarity explains why this tree is still common in regions near densely populated areas.

"Cunninghamia is the *Shan shu* of the Chinese and is esteemed the most useful of all their timber trees. The wood is fragrant, soft, and easily worked; and it is extensively employed in all branches of carpentry, in general construction work, for pillars and planking, and as masts for native boats. It is also the principal coffin wood of central and western China, the fragrant properties being considered to act as a preservative. In parts of western Szechwan, notably in the Chienchang Valley, and in the valley of the Tung River a few days' journey west of Fulin, whole forests of this tree were engulfed by an earthquake two or three centuries ago. The wood of these trees is to-day mined and furnishes the most valuable of all coffin material. From these logs, known as *Hsiang-mu* (fragrant wood) or *Yin-chén-mu* (long-buried wood), planks of huge size can be cut, and a coffin made of them sells for a thousand to fifteen hundred ounces of silver. This buried wood is pale brown, close in texture, but easily worked and pleasantly fragrant. Trees of this conifer equalling in size those buried giants can not be found in China to-day except as rare and isolated specimens associated with temples or shrines." (*Sargent, Plantae Wilsonianae, vol. 2, p. 51.*)

44666. LIQUIDAMBAR FORMOSANA Hance. Hamamelidaceæ.

"From open land, Chekiang, November 14 to 30, 1916. Chinese name *Fêng hsiang* (fragrant maple)." (*Bailie.*)

A handsome tree 20 to 40 m. (65 to 130 feet) in height, with a straight trunk, a much-branched head, and, frequently, buttressed roots. The leaves turn to a chestnut brown or red in the autumn and are retained late into the winter. In juvenile plants the leaves are five lobed, while in the adult trees the leaves are only three lobed and are smaller. In Kiangsi the wood is used for making tea chests. This is one of the most widely distributed trees in China, being particularly abundant in western Hupeh. It is cultivated in Japan. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 421.*)

44667. PLATYCARYA STROBILACEA Sieb. and Zucc. Juglandaceæ.

"Collected on a mountain, Anhwei, November 14 to 30, 1916, by students of the university. Chinese name *Hua kuo shu*." (*Bailie.*)

A bush, small tree, or rarely a tree up to 65 feet in height, with thick, dark, and deeply furrowed bark. The branches are moderately thick and form a rounded or flattened head. The leaves, which are 8 to 12 inches long, are composed of 9 to 17 sessile, doubly serrate leaflets; the fruiting cones are oval, brown, and up to 1½ inches in length. In Hupeh, China, a black dye for cotton is prepared from the fruit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2708*, and from *Sargent, Plantae Wilsonianae, vol. 3, p. 180.*)

44668. QUERCUS sp. Fagaceæ.**Oak.**

"From Kiangsi, November, 1916. Collected by Miss Holt." (*Bailie.*)

As many Chinese oaks have proved hardy and desirable trees in the United States, this may also prove of value.

44660 to 44670—Continued.**44669. QUERCUS VARIABILIS** Blume. Fagaceæ.**Oak.**

"Bought from natives, Anhwei, November 14 to 30, 1916. Chinese name *Ma li* (hemp chestnut)." (*Bailie*.)

A large tree, up to 25 m. (80 feet) in height, in mixed woods or forming pure stands at altitudes of 800 to 1,600 m. (2,600 to 5,200 feet) in central and western China. It has handsome, pale-gray, deeply furrowed bark, dark-green, crenately serrate leaves with bristlelike teeth, and almost sessile roundish acorns. This oak has proved hardy in Massachusetts and western New York. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2885, and from *Sargent, Plantæ Wilsonianæ*, vol. 3, p. 219, where it is doubtfully referred to *Q. variabilis*.)

44670. TRACHYCARPUS EXCELSUS (Thunb.) Wendl. Phœnicaceæ. **Palm.**

"From open land in a vegetable garden, Chekiang, November 14 to 30, 1916. Obtained by forestry students of the university. Chinese name *Tsung lü* (tree whose bark furnishes clothes for poor people)." (*Bailie*.)

A tall, robust, unarmed palm, clothed by the old leaf sheaths, with large, fan-shaped, finely cut leaves which eventually become 4 or 5 feet wide. The flowers are small, clustered two to four on tubercles in the leaf axils, and the fruits are roundish drupes. This ornamental palm is native to China, but is cultivated in many places in Asia and will grow in the open in the southern United States as far north as Georgia. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 6, p. 3362, and from *Flore des Serres et des Jardins de l'Europe*, vol. 22, p. 207.)

44671 to 44673. ANNONA (CHERIMOLA × SQUAMOSA) × RETICULATA.
Annonaceæ. Cuatemoya.

From Lamac, Philippine Islands. Cuttings presented by Mr. P. J. Wester, horticulturist in charge of the Lamac Experiment Station. Received May 7, 1917.

The following hybrids were obtained by the pollination of an atemoya (*A. cherimola* × *squamosa*) by a custard-apple (*A. reticulata*). The fruit is well shaped but rather small, about the size of a sugar-apple, with a yellowish green, almost glabrous surface, very thick, tough skin, and white, tender, melting, juicy, subacid, aromatic flesh of excellent flavor. (Adapted from *Wester, Philippine Agricultural Review*, February, 1914.)

44671. No. 3685-1.**44673.** No. 3685-16.**44672.** No. 3685-2.**44674 and 44675. PYRUS spp.** Malaceæ.**Pear.**

From Ningpo, China. Cuttings obtained by Rev. L. C. Hylbert, American Baptist Mission, through Rev. G. W. Sheppard, English Methodist Mission. Received May 3, 1917.

These cuttings were sent in response to a request for propagating material of certain pear trees from the island of Chusan which produce immense fruit. Mr. Hylbert reports that "the cuttings were secured from a gentleman's garden and are said to be beyond price."

44674. No. 1.**44675.** No. 2.

44676. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received June 30, 1917.

"Var. *alba de Llamas*. For planting these seeds, deep, porous, well-sifted earth should be prepared. The surface of the soil should be perfectly level. Sow in lines fairly well spaced, covering with half an inch of finely powdered earth containing much humus. Keep the planting with not less than 18 per cent or more than 32 per cent moisture. When the first young growth is noted protect it from the direct rays of the sun. Seeds will take from 6 to 12 months to germinate. The young plants need a damp soil and atmosphere and much protection from the direct rays of the sun, as they are very delicate until 2 years old. The plant requires a mean annual temperature of about 72° F. These seeds came from what is considered the best plantation in the world." (*Damon.*)

44677 and 44678.

From Yunnanfu, Yunnan Province, China. Purchased from Mr. Frank Pilson. Received June 25, 1917.

44677. DOCYNIA DELAVAYI (Franch.) C. Schneid. Malaceæ.

"*To-i*. Wild pear." (*Pilson.*)

An ornamental, evergreen, spiny tree, up to 30 feet in height, with glossy, ovate-lanceolate leaves, 2 to 4 inches long, and umbels of white flowers which appear in the spring. The fruit is an ovoid pome about an inch long. The tree is a native of southwestern China and has recently been introduced into the subtropical regions of the United States. The fruits are more or less acid and are used for cooking. They could possibly be improved by selection and hybridization. The tree is propagated by seeds and might possibly be grafted on apple stock. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1063.*)

44678. QUERCUS sp. Fagaceæ.

Oak.

"I sent back to Szemao to get acorns of *Quercus rex*. Talifu is 14 days from here by sedan chair and Szemao 20, so that I found it necessary to enlist the aid of friends in securing these seeds." (*Pilson.*)

Received as *Quercus rex*, but the material does not agree with that of this species previously received.

44679 to 44681. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April to June, 1917.

44679. "(Nos. 98, 158, 177. Avocado No. 22.) *Kekehi*. A remarkable little fruit, valuable not only for its earliness but also for its productiveness and good quality. It commences to ripen in December, at least two months before most of the other avocados in the same region. Though small in size, the seed is proportionately small, leaving a good amount of flesh of excellent quality. It has a very long ripening season, which suggests its use as a variety for the home garden.

"The parent tree is growing in a sitio belonging to Santiago Mendoza, in the town of Purula, Department of Baja Vera Paz, Guatemala. The altitude is approximately 5,150 feet. The soil is a heavy clay loam. The tree stands on a slope, in the midst of a small patch of maize (Indian corn). It is about 35 feet in height, with a trunk 2 feet

44679 to 44681—Continued.

thick at the base, branching about 10 feet from the ground. The crown is broad and spreading, but sparsely branched. To judge from the size of the tree it must be at least 30 or 40 years old. It seems to be a vigorous grower, the branchlets being stout, well formed, and of good length. The bud wood furnished by this tree is quite satisfactory, having well-developed eyes which do not show a tendency to drop and leave a blind bud. The tree is uncared for and has much dead wood in it.

"While Purula is scarcely higher than Antigua, it has a colder climate. It is not, however, sufficiently cold to test the hardiness of avocado trees of the Guatemalan race.

"The tree has not been seen in bloom, but probably flowers about February. In good seasons it carries an enormous crop of fruit. This would be expected of a small-fruited variety. The first fruits turn color about the first of December and can then be picked. The height of the season, however, is not until February, at which time the fruits are fully mature. If allowed to remain on the tree, many of them hang until April or May.

"The fruit is pear shaped or obovoid, small, weighing not over 6 ounces (it will probably weigh more when grown under cultivation in California and Florida), somewhat rough on the surface, and maroon colored. The skin is thick and woody. The flesh is yellow, sometimes slightly discolored with fiber streaks, but with no objectionable fiber. The flavor is rich and pleasant. The seed is medium sized in comparison with the size of the fruit. In comparison with the seeds of most other 6-ounce fruits it would be called small.

"The variety may be formally described as follows: Form broadly obovoid to pyriform; size small, weight 5 to 6 ounces, length $3\frac{1}{4}$ to $3\frac{1}{2}$ inches, greatest breadth $2\frac{3}{8}$ to $2\frac{1}{4}$ inches; base tapering, the moderately stout stem, which is $5\frac{1}{2}$ inches long, being inserted slightly obliquely without depression; apex rounded or almost imperceptibly flattened; surface rough, deep dull purple-maroon or purple in color, with rather few small russet dots; skin thick, one-sixteenth of an inch at base, nearly one-eighth of an inch toward the apex of the fruit, coarsely granular and woody in texture; flesh rich cream yellow, changing to pale green near the skin, sometimes marked with fiber traces but without any tough fibers, melting and buttery in texture, of very rich and agreeable flavor; quality very good; seed roundish oblate, small to medium in size, weighing less than 1 ounce, tight in the seed cavity, with both seed coats adhering closely." (*Popenoe.*)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 130, fig. 26; reprint, 1918, p. 25, fig. 26; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 58, pl. 19.

44680. "(Nos. 99, 159, 178. Avocado No. 23.) *Mayapan*. This variety possesses several excellent commercial characteristics—round form, desirable size (nearly 1 pound), attractive purple color, thick, firm skin, and flesh of excellent quality. In this latter respect it is one of the very best varieties in the collection. The seed is not large and the tree is very productive. It seems a very promising avocado.

"The parent tree is growing in a sitio owned by Arcadio Saguirre, but now occupied by Eusebio Guzman, in the town of Purula, Depart-

44679 to 44681—Continued.

ment of Baja Vera Paz, Guatemala. The altitude of this town is approximately 5,150 feet. The soil is a heavy clay loam, black, very fertile, and retentive of moisture. The tree stands at the rear of a small garden, close to a hedge of chichicaste (*Loasa speciosa*). It is slender, apparently not more than 15 to 20 years old, about 40 feet high, with a trunk 1 foot thick at the base. The crown is slender, but well branched, with an abundance of fruiting wood. The young growths are quite vigorous and shapely, indicating that the variety will probably be a good grower. The bud wood from the parent tree is satisfactory, the branchlets being of good length, round, smooth, with the eyes well placed, strong, and not inclined to fall early. If the young trees show a tendency to grow tall and slender, they can easily be kept in hand by judicious pruning.

"The climate of Purula is colder than that of Antigua, though the altitude is about the same. It is not sufficiently cold, however, to test the hardiness of avocados of the Guatemalan race. It must be assumed that this variety is of average hardiness until it can be put to a test in the United States.

"The flowering season of the parent tree is in March and early April. It blooms profusely and sets a heavy crop of fruit. The crop produced in 1917 from the 1916 blooms was very heavy, and another equally heavy crop was set from the 1917 blooms. The productiveness of the variety gives promise of being well above the average. The ripening season commences about the middle of March and extends to the first of July. It can probably be considered midseason or slightly later than midseason.

"The fruits are of attractive round form, nearly a pound in weight, with a slightly rough surface of purple color. The skin is much thicker than the average, but not very brittle. The flesh is rich yellow in color, absolutely free from discoloration of any sort, dry and oily, cutting like soft cheese. The flavor is exceptionally rich and nutty. The seed is rather small and is tight in the cavity. The size of the fruit conforms admirably to hotel and restaurant requirements, where it is desired to serve a half fruit as a portion, and the quality is so unusually good that it would seem that this variety is of exceptional promise.

"Following is a formal description of the fruit: From spherical to roundish obovoid, sometimes slightly oblique; size medium to above medium, weight 13 to 16 ounces, length $3\frac{1}{2}$ to 4 inches, greatest breadth $3\frac{1}{2}$ to $3\frac{3}{4}$ inches; base rounded or obscurely pointed, the stem rather slender, 7 inches long, inserted obliquely, without depression; apex rounded or slightly flattened obliquely; surface decidedly rough, greenish purple to dull purple in color, with numerous large greenish yellow dots; skin very thick, varying from as much as three-sixteenths of an inch near the stem, where it is thickest, to somewhat more than one-sixteenth of an inch near the apex, coarsely granular in texture, woody, but separating readily from the flesh at the right stage of ripeness; flesh rich cream yellow in color, without fiber discoloration, firm, meaty, of rich and pleasant flavor; quality excellent; seed oblate-spherical to spherical in form, medium sized, weighing $1\frac{1}{2}$ to 2 ounces, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons." (*Popenoe.*)

44679 to 44681—Continued.

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 131, fig. 27; reprint, 1918, p. 25, fig. 27; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 59, pl. 20.

44681. "(Nos. 100, 160. Avocado No. 25.) *Kayab*. This is a variety of excellent quality and desirable shape. It resembles the Florida *Trapp* and the *Chisoy* (S. P. I. No. 43935) of this collection in form and size. Some of the specimens examined had large seeds, but the best ones had seeds which could be termed medium sized or almost small in comparison with the size of the fruit. In small specimens of any variety the seed commonly appears large. This variety was not studied as thoroughly as some of the others, but it is considered well worthy of a trial in the United States.

"The parent tree is growing in the cafetal of Francisco Muus called 'Chiquitop' (Tres Chorros in Spanish), in the edge of the town of San Cristobal, Department of Alta Vera Paz, Guatemala. The altitude is about 4,600 feet. The soil is heavy reddish clay, which is very tenacious when wet. The tree stands among coffee bushes 6 to 8 feet high. It is about 40 feet in height, with the trunk 18 inches thick at the base, branching 12 feet from the ground. The crown is broad and spreading, well branched and dense. The branchlets are rather short, but of good appearance, being well formed and stout. The bud wood is good, but it is difficult to get long bud sticks from the parent tree. The eyes are well developed and do not drop early.

"Varieties growing at this altitude in Guatemala are not subjected to severe frosts; hence, there is no way of telling whether they are hardier than the average until they are tested in the United States.

"The tree probably flowers in late February and March. It is said to fruit heavily, but at the time it was examined in 1917 only a few fruits were left on it. The ripening season is from February to May, which is about the main season for avocados at San Cristobal.

"The fruit is round, about a pound in weight, yellowish green in color, with a moderately thick skin. The flesh is yellow, clear, dry, of very rich flavor, and free from any discoloration. The seed is medium sized in large specimens, being rather large in some of the smaller specimens examined. In many instances the seed is placed to one side of the center of the fruit.

"A formal description of the fruit follows: Form obliquely spherical, sometimes slightly narrowed toward the base; size medium to very large; weight 14 to 20 ounces, length $3\frac{3}{4}$ to 4 inches, breadth $3\frac{1}{2}$ to 4 inches; base slightly flattened, oblique, the stem inserted obliquely without depression; apex obliquely flattened; surface pebbled, most conspicuously so around the base of the fruit, deep green to yellowish green in color, almost glossy with numerous small russet or yellowish dots; skin moderately thick, one-sixteenth to one-eighth of an inch, hard and woody; flesh cream yellow in color, without fiber or discoloration, firm, dry, of very rich flavor; quality excellent; seed medium sized, weighing about 2 ounces, sometimes excentric, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 132, fig. 28; reprint, 1918, p. 25, fig. 28; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 60.

44682. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received April 26, 1917.

"In the mountains of northern and eastern Guatemala there grows a fruit closely resembling the avocado yet sufficiently different in foliage and flower to indicate that it is a distinct species. In eastern Guatemala, around Zacapa, Gualan, Chiquimula, and El Rancho, it is called *shucte*, *chucte*, or sometimes *chaucte*, while in the northern part of the Republic, immediately across the great Sierra de las Minas, it is known under the names *coyó* and *coyocté*. These latter names have been thought by some to indicate two distinct fruits, perhaps distinct species, but an examination of several trees in the Alta Vera Paz shows that they are in reality the same. Apparently the Indians call the cultivated fruit (for it is often grown in their gardens and around their huts) *coyó*, and the wild tree, which is abundant in the mountains, *coyocté*. The suffix *té* in the Kekchi language is said to mean tree; *coyocté* would therefore mean nothing more than *coyó* tree.

"In some sections of the Alta Vera Paz the *coyó* is fully as common as the avocado and seems to be held by the Indians in practically the same high esteem. An American coffee planter who lives in this region tells me that he considers the *coyó* even superior to the avocado in flavor, and after testing it I am inclined to agree with him.

"The *coyó* must be considered, then, an unusually interesting new fruit, but it has certain defects which make it seem, on the whole, inferior to the avocado. It has, for example, a large seed in most cases, and the flesh is sometimes disagreeably fibrous. But it is quite variable, like its relative the avocado, and some *coyós* are much superior to others.

"The *coyó* tree looks, at first glance, much like an avocado tree and usually reaches about the same size. It is distinguishable from the avocado by the character of its leaves which, upon close examination, differ from those of the avocado in form, are larger, and have more or less brownish pubescence on the lower surface, especially along the midrib. The flowers, when seen from a distance, look like those of the avocado.

"The fruits are remarkably similar in general appearance to avocados of the West Indian race, such as are grown in Florida. Like avocados, they vary greatly in form. Most commonly they are pyriform, with a well-defined neck, but they are sometimes obovoid, sometimes broadly pyriform, and sometimes long and slender. They are also quite variable in size, but the majority seem to be from three-quarters of a pound to $1\frac{1}{2}$ pounds in weight. I have heard of *coyós* weighing 2 to 3 pounds. The surface is about as smooth as that of a West Indian avocado and often of similar color, yellowish green, but sometimes it is purplish or bronze. The skin is thicker than that of any of the avocados except those of the Guatemalan race; it is not hard, however, as in the latter, but leathery and pliable. Frequently it adheres to the flesh, which is of a peculiar brownish white color, gives off a milklike juice when squeezed, and is of fine, oily texture like the flesh of an avocado. Usually there are numerous fibers running through the flesh, although some *coyós* are said to be practically free from fiber. The flavor is strongly suggestive of the avocado, being of the same rich, nutty character, but is nevertheless distinct; it has a richness and nuttiness of its own, which suggest to me the flavor of a ripe coconut. The seed is larger in comparison to the size of the fruit than it is in the best of our budded varieties of the avocado, but it is no larger than in many seedling avocados. In general appearance it resembles an avocado seed, but the cotyledons when cut are a dull rose pink instead of whitish. The

flesh often adheres closely to the seed, making it difficult to prepare the coyó for eating. I have seen some fruits, however, in which the two halves could be separated, leaving a cavity in which seasoning can be placed.

"The coyó is used by the Indians of Guatemala in the same manner as the avocado, which is to say that it is eaten out of hand, without the addition of seasoning of any sort, and frequently to the accompaniment of tortillas—thin, round cakes made from Indian corn, which are a staple article of diet throughout this part of Central America. I have not yet experimented to see how the coyó tastes when prepared in salads or seasoned with vinegar, salt, and pepper, but I have found it excellent when diced and eaten in bouillon, as is often done with the avocado by Guatemalans of the upper classes. To me its flavor is decidedly agreeable, and a good coyó, free from fiber and with a seed not too large in proportion to the size of the fruit, would impress me as a worthy rival of the avocado.

"The tree grows under a variety of conditions. In the valley of the Motagua River, near Zacapa and El Rancho, it is found near the banks of streams. The air in these regions is exceedingly hot and dry during a large part of the year, and the hillsides are covered with typical desert vegetation—cacti, euphorbias, thorny leguminous shrubs, and small trees. Contrasted with these conditions, the upper Polochic Valley, in Alta Vera Paz, where the coyó is exceedingly abundant, is a very moist region with rainfall, as the inhabitants state, 'thirteen months in the year.' In this part of Guatemala I have seen coyós at altitudes well above 5,000 feet. Like the Guatemalan race of avocado, it is very abundant from 4,000 to 5,000 feet, but unlike the latter it seems also to do very well at lower altitudes and is found around Zacapa at altitudes of 500 feet above the sea, where the Guatemalan race of avocados is usually replaced by the West Indian.

"To judge from its behavior in Guatemala, the coyó ought to be successful in both California and Florida. During the coming summer I hope to make a search for superior trees and to obtain bud wood for introduction into the United States. The season of ripening is from June to August in the lowlands and from August to October or even November in the highlands. There are thousands of trees in Alta Vera Paz, and it should certainly be possible to find among them a few superior ones well worthy of propagation.

"In the coyó we have a fruit new to North American horticulture, yet one which is grown by the Indians of northern Guatemala as extensively as the avocado and apparently looked upon by them as almost its equal. When good varieties have been obtained and propagated by budding, it seems reasonable to expect that the coyó will find a place in the orchards of the United States throughout approximately the same belt in which the avocado is grown."
(*Popenoe*.)

For an illustration of the coyó fruits, see Plate VII.

See also The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 37.

44683 and 44684.

From Guatemala. Cuttings collected by Mr. Wilson Popenoe, agricultural explorer. Received April 26, 1917.

44683. *POLYGALA FLORIBUNDA* Benth. Polygalaceæ.

Chupak.

"(No. 102. From Chitzuhai, near Tactic, Alta Vera Paz. April 17, 1917.) A handsome flowering shrub found in the gardens of the Indians in the settlement called Chitzuhai, about 5 miles north of the town of

44683 and 44684—Continued.

Tactic, in the Department of Alta Vera Paz. Since the altitude is about 6,000 feet, the plant should be slightly hardy, and may succeed in California as well as in Florida. It reaches a height of about 8 feet; its leaves are narrow and about 3 inches long; the flowers are borne in long spikes and are individually about half an inch in diameter and bright purple in color. The plant is used by the Indians in place of soap, the leaves when macerated in water making green suds." (*Popenoe*.)

44684. RONDELETIA RUFESCENS Robinson. Rubiaceæ.

"(No. 103. From Chitzuhai, near Tactic, Alta Vera Paz. April 17, 1917.) A handsome pink-flowered shrub from the mountains north of Tactic, near the settlement of Chitzuhai, Alta Vera Paz, at an altitude of more than 6,000 feet. This plant grows among second-growth timber, where there is an abundance of sunlight. It is slender in habit, reaching a height of 8 feet or more, and bears large corymbs of small, exceedingly fragrant flowers of a delicate shell-pink color. It seems well worthy of a trial in California and Florida." (*Popenoe*.)

44685. ASTILBE TAQUETI Vilm. Saxifragaceæ.

From Paris, France. Plants purchased from Vilmorin-Andrieux & Co. Received May 16, 1917.

A very robust perennial herb, 2 to 2½ feet in height, with tripinnate, finely and doubly dentate leaves, and panicles of reddish purple flowers borne on stout flowering stems in July. The flowering stems are covered with long red hairs which are especially abundant on young growth. The plant may be propagated from the abundant seeds, but if placed near closely related species there would be danger of hybridization. (Adapted from *Revue Horticole*, December 16, 1916.)

44686 to 44688.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received at the Plant Introduction Garden, Chico, Calif., April 21, 1917. Quoted notes by Mr. Meyer.

44686. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ. **Peach.**
(*Prunus davidiana* Franch.)

"(No. 2328a. Peking, China, December 15, 1916.) Stones of the *davidiana* peach gathered in Chihli Province by various Chinese collectors and purchased from them. To be grown as stock for various stone fruits in the semiarid regions in the United States."

44687. ZIZIPHUS JUJUBA Mill. Rhamnaceæ. **Jujube.**
(*Z. sativa* Gaertn.)

"(No. 2329a. Peking, China, December 16, 1916.) Small dried jujube fruits, selected for good kernels, purchased in the open market at Peking. To be grown for stocks for improved varieties."

44688. DIOSPYROS LOTUS L. Diospyraceæ. **Persimmon.**

"(No. 2331a. Peking, China, December 16, 1916.) Dry *ghoorma* fruits full of seeds, purchased in the open market at Peking. To be distributed among growers of oriental persimmons in semiarid sections of the United States as a drought and alkali resistant stock. Chinese name *Hei tsao* (black jujube), which is a misnomer."



A NEW RELATIVE OF THE AVOCADO, THE GUATEMALAN COYÓ.

(*Persea schiedeana* Nees., S. P. I. No. 44682.)

The coyó, according to Mr. Popenoe, is fully as delicious as the avocado and escaped the search for new fruits until he discovered it at Tactic and sent in cuttings and seeds in 1917. The variety pictured above is said to be very choice. As the tree is tender its cultivation will probably be limited to the tropical zone. Its unusual qualities should recommend it strongly to tropical horticulturists. (Photographed by Wilson Popenoe, Tactic, Guatemala, October 7, 1917; PI7363FS.)



THE YAM BEAN AS A COVER CROP.

(*Cacara erosa* (L.) Kuntze, S. P. I. No. 44839.)

This yam bean is grown quite generally in the Tropics for its tender turniplike roots, which are so sweet and full of water as to be palatable when eaten raw; it is also cooked. The roots grow to the size of a large pumpkin if left in the ground for several years, but the young roots only are really edible. In southern Florida, Mr. Edward Simmonds suggested its use as a cover crop in the citrus orchards, and Mr. George B. Cellon has demonstrated its usefulness for this purpose. A single seed is planted in the quadrangle between four trees and without extending its roots far from the spot where the seed is planted it covers the ground with a mulch which resembles that made by the velvet bean, but without climbing over the trees. Prof. Charles V. Piper is on the right; Mr. Cellon on the left. (Photographed by David Fairchild at George B. Cellon's place, Miami, Fla., March 25, 1919; P24309FS.)

44689 and 44690. Poaceæ.**Grasses.**

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received April 20, 1917.

"Large, reedlike, tufted perennial grasses which grow to a height of 8 or 9 feet, forming immense clumps, in the more barren sandy portions of the region where the provinces of Tucuman, Catamarca, and Salta join. They grow in almost pure sand, more or less alkaline, in districts where no rain falls for months at a time, and are readily eaten by cattle and horses. They might prove to be good ornamentals and useful forage crops for the semiarid portions of the southwestern United States."

44689. CORTADERIA RUDIVUSCULA Stapf.

44690. SPOROBOLUS sp.

44691 to 44698.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received April 26, 1917.

Introduced for the work of the Office of Forage-Crop Investigations.

44691 to 44695. LATHYRUS spp. Fabaceæ.

44691. LATHYRUS sp.

These seeds were received under the name of *L. undulatus*, but they do not agree with the seeds of that species in the office seed collection.

44692. LATHYRUS CIRRHOSUS Seringe.

A glabrous, climbing annual, 4 to 10 dm. (16 to 40 inches) long, with a woody, straight-winged stem; leaves composed of two to three pairs of nearly oblong leaflets, terminated by branching tendrils; purple or pinkish flowers in three to eight flowered loose racemes; and smooth, tawny pods about 2½ inches long, native to the barren slopes of the Pyrenees. (Adapted from X. Philippe, *Flore des Pyrénées*, p. 261.)

44693. LATHYRUS LAXIFLORUS (Desf.) Kuntze.

An erect herbaceous plant, native of the island of Crete, with a simple, slender, angled, hairy stem about a foot tall; alternate hairy leaves composed of two oval pointed leaflets, without tendrils; lax racemes of three to five bluish violet flowers; and hairy pods about an inch long. It is said to have a twisted root 1 foot long and 4 inches thick, with white flesh and long fibers. (Adapted from M. Desfontaines, in *Annales du Muséum d'Histoire Naturelle*, vol. 12, p. 57, 1908, as *Orobus laxiflorus*.)

Index Kewensis refers this to *Lathyrus hirsutus* L., but Ascherson and Graebner consider it a distinct species.

44694. LATHYRUS PISIFORMIS L.

A stout clambering perennial, up to 3½ feet in length, with narrow or broad-winged stem; compound leaves with three to five pairs of nearly ovate leaflets, terminated by rather slender tendrils; dense racemes of small violet flowers; and dark-brown pods about 2 inches long. It is native to central Europe and central and southern Asia. (Adapted from Ascherson and Graebner, *Synopsis der Mitteleuropäischen Flora*, vol. 6, p. 1034.)

44691 to 44698—Continued.**44695. LATHYRUS SYLVESTRIS L.****Flat pea.**

A straggling or climbing European perennial, 3 to 5 feet in length, with a stout, winged stem and a creeping rootstock. It has thick, linear-lanceolate leaflets, rose-colored flowers half an inch long with the wings purple at the summit, and lance-shaped pods 2 to 3 inches long. As an ornamental it is inferior to other perennials, but it grows well on poor, sandy soil, will stand severe frosts and droughts, and is useful as a forage plant and for plowing under in a green state as a fertilizer. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1825.)

Received as *Lathyrus variegatus* Gilib., which is now referred to *L. sylvestris*.

44696. PHALARIS BULBOSA Juslen. Poaceæ.**Canary grass.**

A perennial tufted grass, with shiny leaves about two-fifths of an inch wide and roots penetrating the soil to a depth of nearly 3 feet; it is native to the Mediterranean countries. It is now cultivated in New South Wales, Australia, where it appears to be an excellent permanent winter grass for coastal and tableland districts. Owing to its deep roots it can endure a considerable amount of drought. Seeds are borne very sparsely on short stems thrown up from the center of the crown. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 2, p. 17, and from the *Agricultural Gazette of New South Wales*, November 2, 1916.)

Received as *Phalaris tuberosa* L., but Juslenius's name is earlier.

44697. PHALARIS PARADOXA L. Poaceæ.**Canary grass.**

An erect annual grass, 2½ feet high, often branched from the lower joints, with rough leaves 3 to 7½ inches long and one-sixteenth of an inch wide, and flower panicles appearing as though gnawed below. It is native to the Mediterranean countries and has been introduced into California. (Adapted from *W. L. Jepson, Flora of Western Middle California*, p. 35.)

44698. PHLEUM ARENARIUM L. Poaceæ.**Grass.**

An annual, tufted, erect, or ascending grass, up to a foot in height, with smooth leaves about an inch long and one-sixteenth of an inch wide. It is native to Europe and the northern coast of Africa. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 2, p. 149.)

44699. × RIBES ROBUSTUM Jancz. Grossulariaceæ. Gooseberry.

From Kew, England. Cuttings presented by Sir David Prain, director, Royal Botanic Gardens. Received April 26, 1917.

This hybrid (*R. niveum* × *hirtellum*) is intermediate between the parents. It is a spiny, vigorous shrub, with white or pinkish flowers and black fruits. It was originally received at Kew from the gardener of the King of Denmark, but is of unknown origin. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2964.)

44700. GLADIOLUS OCHROLEUCUS Baker. Iridaceæ. Gladiolus.

From South Africa. Collected in Basutoland and presented by Mr. L. Peringuey, director, South African Museum, Cape Town. Received April 26, 1917.

A South African gladiolus with medium-sized globose corms; a stem up to 3 feet tall, including the inflorescence; and four to six rigid, sword-shaped, strongly ribbed leaves, up to a foot in length, arranged in a basal rosette. The eight to twelve plain creamy yellow flowers occur in lax spikes 6 to 9 inches long, the individual flowers being nearly 2 inches in length. (Adapted from W. T. Thiselton-Dyer, *Flora Capensis*, vol. 6, p. 151.)

44701 and 44702.

From Bogota, Colombia. Presented by Mr. M. T. Dawe, director, Estación Agronomica Tropical de Juan de Dios Carrasquilla, San Lorenzo, Tolima, Colombia. Received April 28, 1917.

44701. DRIMYS GRANATENSIS Mutis. Magnoliaceæ.

"*Casa de anta*. (No. 134. Andes of Bogota.) This is the species of *Drimys* found on the Andes of Bogota." (Dawe.)

A white-flowered evergreen shrub 5 to 12 feet in height, with few branches and oval-oblong leathery leaves with rounded ends. The few-flowered umbels appear near the ends of the branches, and the obovate fruit is berrylike, a quarter of an inch long, with succulent flesh inclosing the numerous seeds. From the crushed leaves a tonic is prepared. The bark is the basis of an aromatic tonic, and the dried fruits are used as a spice. (Adapted from M. A. de Saint-Hilaire, *Plantes Usuelles des Brésiliens*, pls. 26-28, 1824.)

44702. TERNSTROEMIA MERIDIONALIS Mutis. Theaceæ.

"(No. 135. Andes of Bogota.) A shrub whose seeds afford a scarlet dye." (Dawe.)

An ornamental evergreen shrub with leathery leaves, whitish flowers, and indehiscent fruits containing large seeds. (Adapted from Lindley, *Treasury of Botany*, vol. 2, p. 1132.)

44703 and 44704. HYOSCYAMUS NIGER L. Solanaceæ. Henbane.

From the Office of Drug, Poisonous, and Oil Plant Investigations. To be grown for that office. Received April 18, 1917.

A coarse, clammy, ill-smelling herbaceous plant, up to about 2½ feet in height, with irregularly lobed leaves 3 to 7 inches long, greenish yellow, purple-veined flowers; and circumscissile capsules. The leaves and flowering tops are of medicinal value. It is annual, biennial, or perennial. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 3, p. 1629.)

44703. Seeds from wild plants.

44704. An annual variety.

44705. CINNAMOMUM CAMPHORA (L.) Nees and Eberm. Lauraceæ. Camphor tree.

From China. Presented by Prof. Joseph Bailie, of the University of Nanking. Received April 27, 1917.

"Collected in open land, Chekiang, November 14 to 30, 1916. Chinese name *Hsiang chang* (fragrant camphor)." (*Baillie*.)

A moderate-sized, much-branched tree with an enlarged base, up to 40 feet in height. It has alternate, ovate-elliptic leaves which are pinkish on the young growths, and small, yellow flowers. The fruits are drupes about the size of a large pea. It is native to China and Japan, but is cultivated in Florida, the Gulf States, and southern California. From the wood is extracted the commercial camphor. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 773.)

Introduced for comparison with the camphor trees already growing in the South.

44706 and 44707. *RIBES VULGARE* Lam. Grossulariaceæ.

Garden currant.

From Lowdham, Nottingham, England. Plants purchased from J. R. Pearson & Sons. Received April 30, 1917. Notes adapted from catalogue of J. R. Pearson & Sons.

44706. *Knight's Sweet Red*. A very prolific currant with large fruits in evenly ripening bunches. It is less acid than other red currants.

44707. *Wentworth Leviathan*. A vigorous, prolific variety with very large white fruits.

44708 and 44709.

From Cairo, Egypt. Plants presented by Mr. Thomas W. Brown, director, horticultural division, Gizeh Branch, Ministry of Agriculture. Received May 1, 1917. Quoted notes by Prof. S. C. Mason, of the Bureau of Plant Industry.

44708. *FICUS SYCOMORUS* L. Moraceæ.

Sycamore fig.

Var. *Roumi*. "The variety *Roumi* is the large-fruited sort, cultivated for its fruits, as distinguished from the *Kalabi*, or 'dog figs,' having small and worthless fruits. In different parts of Egypt *Balady*, *Sultany*, and *Arabi* are varietal terms synonymous with *Roumi*."

44709. *OLEA EUROPAEA* L. Oleaceæ.

Olive.

"*Tafahi*. From the omda of the village of Fedimine Mr. Brown secured the promise of some rooted sprouts of the Fayum olive varieties for me. These he afterwards obtained and grew in the gardens at Gizeh. The above specimen is one of them.

"The *Tafahi*, or apple olive, is held in the highest repute of the three varieties grown in Fayum, the industry centering around the village of Fedimine. Though reputed as only moderately productive, its large size and fine appearance cause it to be in great demand throughout the Egyptian delta. As the flesh is very soft and buttery when fully ripe it is marketed about November 1, when it begins to color. From the largest ripe fruit found at Fedimine November 20, I made the following description: Fruit deep purplish black with lilac bloom, 4.5 cm. long, 3 cm. broad, broadly ovate with blunt apex terminating in a short, acute tip. There is a rather deep cavity around the stalk, and some fruits show a slight fold. The flesh is about 1 cm. in thickness; the pit is large and rough, with deep longitudinal furrows, about 2 cm. long and 1 cm. broad,

44708 and 44709—Continued.

broadly rounded at the base, obtusely pointed at the apex. The fresh olives are packed in leaves in crates (holding about 3 pecks each) made from the ribs of the date leaf and are pickled by the people of the valley according to their fancy. Pickled *Tafahi* olives were seen by the writer both at Fedimine and in Cairo.

"At present no oil is manufactured from the Fayum olives, but in one of the villages were seen stones of ancient oil mills of beautiful red Aswan granite and no doubt of Roman origin. Their purpose was unknown to the present inhabitants. From this it may be conjectured that the present olive trees of Fayum, as well as those of Dakhleh Oasis, have come down from the time of the Roman occupation during the first century A. D."

44710. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received May 4, 1917.

Mulatinho (little mulatto). A Brazilian bush variety of the common kidney bean, cultivated in the coastal States, especially in Sao Paulo, where it matures in 60 days, thus allowing two crops a year. The beans contain a large amount (36 per cent) of starch and are used for human food in much the same manner as the kidney bean. (Adapted from *Journal of Commerce, New York, January 27, 1917.*)

44711. CARAPA GUIANENSIS Aubl. Meliaceæ. Crabwood tree.

From Trinidad, British West Indies. Obtained from Mr. R. O. Williams, curator, St. Clair Experiment Station. Received May 4, 1917.

A tall tree, with compound leaves $1\frac{1}{2}$ feet long, small axillary flowers, and thick-shelled, russet-brown fruits about 3 inches in diameter, containing two to six chestnutlike seeds. The native name in Guiana is *andiroba* (bitter oil), referring to the oil expressed from the seeds. This oil is used by the natives, who rub it into their skin to protect themselves from noxious insects; it is also made into a varnish or lacquer for iron objects, protecting these from rust. From the bark and leaves a decoction is prepared which is a remedy for skin disease; the bark contains an alkaloid termed *carapina*. The tree should be tried as an ornamental in southern Florida and southern California. (Adapted from *J. B. Rodrigues, Hortus Fluminensis, p. 73*, and note of Dorsett, Shamel, and Popenoe, under S. P. I. No. 36715.)

Introduced for trial as an insecticide.

44712. CANNABIS SATIVA L. Moraceæ. Hemp.

From Manchuria. Presented by Mr. M. Toyonaga, director, Central Experiment Station, Keijo, Chosen (Korea). Received May 4, 1917.

In Manchuria, where this plant is grown for the oil, the seeds are crushed and steamed, and subjected to great pressure, yielding the oil which the Chinese call *ma tzŭ yu* (hemp-seed oil). (Adapted from *A. Hosie, Manchuria, p. 188, 1901.*)

Introduced for the Office of Drug, Poisonous, and Oil Plant Investigations.

44713 to 44720. MALUS SYLVESTRIS Miller. Malaceæ. Apple.
(Pyrus malus L.)

From Ottawa, Ontario, Canada. Cuttings presented by Mr. W. T. Macoun, Dominion horticulturist. Received May 4, 1917. Quoted notes from the Reports of the Horticulturist, Experimental Farms, Ottawa, Canada, 1906 to 1915, which should be referred to for a full account of the development of the remarkable collection of seedlings at the Experimental Farms, Ottawa.

44713. "*Anson* (*Winter St. Lawrence* seedling). Fruit of medium size, roundish, slightly ribbed; cavity of medium depth and width; stem short, stout; basin deep, narrow, wrinkled; calyx closed; skin moderately thick, tough, pale yellow to almost white, thinly splashed and streaked with carmine; the dots obscure; flesh white, fine grained, tender, juicy; core and seeds of medium size; flavor subacid, pleasant, Fameuselike; quality good to very good; season October, probably through November.

"Resembles *Winter St. Lawrence* a little in flavor. Distinctly of the *Fameuse* group. Quite promising, season coming just before *McIntosh* and *Fameuse*."

44714. "*Battle* (*Wealthy* seedling). Fruit above medium to large in size, roundish conic; cavity deep, of medium width; stem short to medium, stout; basin of medium width and depth, almost smooth; calyx closed or partly open; skin moderately thick, tough, pale greenish yellow, well splashed and washed with bright purplish red; the dots few, yellow, distinct; flesh white, tinged with red, firm, crisp, breaking, tender, rather coarse, juicy; flavor briskly subacid, aromatic, raspberrylike; core medium; quality good; season late August to early September; ripens before *Duchess*.

"Handsome in appearance. Resembles *Wealthy* somewhat in outward appearance and flavor. Should make an excellent cooking apple, and is good for dessert."

44715. "*Drumbo* (*Winter St. Lawrence* seedling). Fruit above medium to large in size, conical; cavity deep, of medium width, russeted; stem short, stout; basin deep, medium width, slightly wrinkled; calyx open or partly open; skin thick, moderately tender, pale yellow, well washed and splashed with dark crimson; the dots few, gray, conspicuous; seeds medium size, acute; flesh white, rather coarse, tender, juicy; core medium; flavor subacid, pleasant; quality good; season, late November to February or later. Resembles *Winter St. Lawrence* very much in outward appearance, flesh, and flavor. Evidently a better keeper than *Winter St. Lawrence*."

44716. "*Galetta* (*Wealthy* seedling). Fruit above medium in size, roundish, flattened at both ends; cavity deep, open, slightly russeted; stem short, stout; basin deep, open, wrinkled; calyx closed or partly open; skin thick, moderately tough, pale yellow, washed and splashed with red, with a suggestion of pink, mostly on the sunny side, the dots obscure; flesh white, crisp, tender, juicy; core medium; flavor subacid, pleasant; quality good; season late August to early September. Promising. Of good quality. A good eating apple. Resembles *Wealthy* somewhat in outward appearance."

44713 to 44720—Continued.

44717. "*Jethro* (*Wealthy* seedling). Fruit above medium size, oblate to roundish, conic; cavity medium depth and width; stem short, stout; basin deep, medium width, wrinkled; calyx open; skin moderately thick, moderately tough, pale yellow, washed and splashed with orange, red, and carmine, green about cavity; the dots numerous, yellow, distinct; flesh yellowish, crisp, tender; core medium size, open; seeds medium size, acute; flavor juicy, briskly subacid, pleasant; quality good; season late September to December. Resembles *Wealthy* very much in flesh and flavor."

44718. "*Luke* (*Wealthy* seedling). Fruit above medium to large; oblate to roundish conic; cavity narrow, medium depth, russeted; stem short, moderately stout; basin open, medium depth, almost smooth; calyx open or partly open; skin thick, moderately tough, pale greenish yellow washed with deep red, mostly on sunny side, dots obscure; flesh dull white or yellowish, rather coarse, tender, moderately juicy; core small; flavor subacid, pleasant; quality good; season October and November, probably to middle or late December.

"Resembles *Wealthy* considerably in outward appearance, character of flesh, and flavor. A better keeper than *Wealthy*."

44719. "*Melvin* (*Wealthy* seedling). Fruit of medium size; roundish; cavity deep, of medium width, sometimes lipped; slightly russeted; stem medium to long, slender to moderately stout; basin medium depth and width, smooth, calyx open or partly open; skin thin, tough, pale yellow, well splashed and washed with rather dull red, but attractive, the dots few, pale, distinct; flesh yellow with traces of red near skin, very tender, melting; core medium; flavor briskly subacid, spicy, good; quality good; season middle to end of August.

"Considerably like *Sops of Wine* in outward appearance and quality, but juicier and of much better quality. Also resembles *Wealthy* somewhat in outward appearance and in its aromatic flavor."

44720. "*Rupert* (*Russian* seedling). Fruit above medium in size, oblate; cavity medium depth and width, russeted; stem short, stout; basin medium depth and width, wrinkled; calyx closed; skin thick, tough, pale greenish yellow, sometimes with a faint pink blush, the dots numerous, green, indistinct; flesh white, juicy, tender; core medium; flavor pleasant, briskly subacid, almost acid; quality above medium to good; season early August. As early or earlier than *Tetofsky* and much better in quality. Better in quality than *Yellow Transparent*. Inclined to water-core."

44721. PHASEOLUS LUNATUS L. Fabaceæ.

Lima bean.

From Concepcion, Paraguay. Presented by Mr. T. R. Gwynn. Received May 7, 1917.

Lynconia. "I named the butter beans *Lynconia* in honor of the estancia in the Province of Buenos Aires from which they originally came. It is a remarkable bean which has been yielding fruit since the middle of last October and is still bearing heavily (March 23)." (*Gwynn*.)

44722 to 44728. GLADIOLUS spp. Iridaceæ.**Gladiolus.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, Agricultural Supply Association. Received May 7, 1917.

44722. GLADIOLUS ALATUS L.

A South African gladiolus with an upright stem 6 to 8 inches in height and with three to four leathery, linear or sword-shaped, stiff leaves, the outermost being twice as long as the others. The five to ten reddish yellow flowers have a fragrance like that of sweetbrier. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 586.)

44723. GLADIOLUS ANGUSTUS L.

A plant with an ascending stem up to 2 feet in height, and narrow, upright leaves with prominent midribs. The white, scentless flowers grow in a lax, one-sided spike. It is native to the Cape of Good Hope. (Adapted from *Curtis's Botanical Magazine*, vol. 17, pl. 602.)

44724. GLADIOLUS BLANDUS Ait.

A South African plant with sword-shaped leaves somewhat shorter than the stem, which is from 6 inches to 2 feet in height and bears three to ten white or reddish tinged scentless flowers. There are many very ornamental horticultural varieties which are easily propagated from seeds and offsets. (Adapted from *Curtis's Botanical Magazine*, vol. 17, pl. 625.)

44725. GLADIOLUS CUSPIDATUS Jacq.

An erect bulbous plant, 2 to 3 feet high, with sword-shaped leaves usually shorter than the stem, and four to eight white or pinkish flowers in a lax, one-sided spike. It is native to the Cape of Good Hope, where it flowers in May and June. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 582.)

44726. GLADIOLUS RECURVUS L.

An ornamental plant, 1 to 3 feet tall, with three linear leaves having prominent midribs. The two to five yellowish purple flowers have a strong violet odor and are produced during April in a lax spike. It is a native of the Cape of Good Hope. (Adapted from *Curtis's Botanical Magazine*, vol. 15, pl. 578.)

44727. GLADIOLUS TRISTIS L.

Avondbloem. A South African plant with two or three linear leaves which are four winged toward the top, due to the comparative size of the midrib, which equals the blades in width. The yellowish flowers, sometimes lightly streaked with purple, give off a very strong fragrance at night, but are practically scentless during the day. (Adapted from *Curtis's Botanical Magazine*, vol. 27, pl. 1098.)

44728. GLADIOLUS UNDULATUS Jacq.

A bulbous plant, with a stem a foot in height, including the spike and several sword-shaped leaves about a foot long. The four to six flowers are milk white marked with red and are produced in a very lax spike. It is native to South Africa. (Adapted from W. T. Thiselton-Dyer, *Flora Capensis*, vol. 6, p. 155.)

44729 and 44730. LACTUCA SATIVA L. Cichoriaceæ. Lettuce.

Seeds grown by Mr. George W. Oliver, of the Bureau of Plant Industry, United States Department of Agriculture, Washington, D. C., from two forms selected by Dr. B. T. Galloway several years ago. Received May 28, 1917.

"Both varieties are identical in growth and are strictly hothouse lettuces. Under good conditions in a cool house they have very large heads from 8 to 10 inches in diameter. Everyone who has sampled them says that they are by far the best forcing lettuces." (*Oliver.*)

44729. "No. 39. White seeded. Parents *Golden Queen* × *Grand Rapids*."

44730. "No. 39. Black seeded. Parents *Golden Queen* × *Grand Rapids*."

44731 to 44739. RAPHANUS SATIVUS L. Brassicaceæ. Radish.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received May 7, 1917.

44731. *Bottle*. A large bottle-shaped radish, called *Tokuri* in Japanese. It is about a foot long. (Adapted from *Useful Plants of Japan*, p. 21.)

44732. *Long String*. A radish with a root over 3 feet long and only 2 or 3 inches in circumference. Very suitable for pickling. (Adapted from *Catalogue of the Yokohama Nursery Co., 1916-17*, p. 77.)

44733. *Nerima Long* (*Mikado*). A variety with large, long, cylindrical roots.

44734. *All Season*. "Called *Tokishiraza* in Japan. It is a very large, long, deep-rooted, snow-white radish which does not extend above the soil; it is always tender and crisp and has a delicious flavor." (*Aggeler & Musser Seed Co., catalogue, 1917*, p. 56.)

44735. *Miyashige*. A variety found chiefly in Miyashige, Province of Owari, Japan, with a conical root about 1½ feet in length and 3½ inches in diameter. It is very sweet and should be boiled, dried, or pickled. (Adapted from *Useful Plants of Japan*, p. 21.)

44736. *Ninengo*. A variety with white, thin, hard roots. It is a biennial, and the seeds are sown at the end of spring. (Adapted from *Useful Plants of Japan*, p. 22.)

44737. *Six Weeks*. No description is available for this variety.

44738. *Sakurajima Mammoth*. The largest variety of radish known, cultivated chiefly at Sakurajima, Osumi, Japan. It is nearly globular, about 3 feet in circumference in the largest forms, and weighs 20 to 30 pounds. It is eaten raw, boiled, dried, or preserved in salt, and has a sweet, wholesome taste. (Adapted from *Useful Plants of Japan*, p. 20.)

44739. *Shogoin*. A variety obtained from seed of variety *Horio* sown in Shogoin, Province of Yamashiro, Japan. It is about a foot long, 6 to 7 inches in circumference, and is of excellent flavor. (Adapted from *Useful Plants of Japan*, p. 22.)

44740. JASMINUM MULTIPARTITUM Hochst. Oleaceæ. Jasmine.

From Cape Town, Union of South Africa. Presented by Mr. L. Peringuey, director, South African Museum. Received May 7, 1917.

A climbing, much-branched, ornamental shrub up to 10 feet in height, with opposite, glabrous, ovate to lanceolate leaves nearly 3 inches in length; the solitary, terminal or axillary, fragrant white flowers are about 1½ inches long. It is native to Natal, South Africa. (Adapted from *J. Medley Wood, Natal Plants*, vol. 4, pl. 328.)

44741. ERAGROSTIS SUPERBA Peyr. Poaceæ.**Grass.**

From Johannesburg, Union of South Africa. Presented by Mr. J. Burt Davy, Agricultural Supply Association. Received May 8, 1917.

Introduced for the Office of Forage-Crop Investigations.

"(March, 1917. Pretoria district.) One of the best native pasture grasses on the high veld, extending also to the bush veld, its range being from about 3,500 feet (or lower) to 5,500 feet or more. It is common in sandy soils in British Bechuanaland, where the rainfall is perhaps not more than 10 inches, coming in summer." (*Davy.*)

A perennial tufted grass with culms 2 to 3 feet in length and blades 2 to 8 inches long. It is native to South Africa, where it is widely distributed. (Adapted from *W. T. Thiselton-Dyer, Flora Capensis, vol. 7, p. 622.*)

44742 and 44743. PAPAVER SOMNIFERUM L. Papaveraceæ.**Poppy.**

From the Office of Drug, Poisonous, and Oil Plant Investigations. Seed to be grown for Dr. W. W. Stockberger, Physiologist in Charge. Received May 8, 1917.

An erect annual, with handsome varicolored flowers, which is cultivated in the Orient for opium manufacture. It was originally introduced into the United States for the use of its palatable seeds in confectionery and the preparation of morphia for medicinal purposes. The seeds yield a comestible oil. It is of comparatively easy culture.

44744 and 44745.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received May 12, 1917.

44744. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ. **Nikau palm.**

A graceful tree, sometimes 30 feet tall, with a ringed, green stem and leaves 14 feet in length, which are used by the Maoris in making their huts. The flowers and the flowering axis are both white. The fruit is a vivid red drupe about half an inch long and so hard that the settlers have used them for ammunition. The top of the stem is quite juicy and is sometimes eaten. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 84.*)

44745. CORYNOCARPUS LAEVIGATA Forst. Corynocarpaceæ. **Karaka.**

A handsome evergreen tree with glossy, laurellike, oblong leaves 3 to 7 inches long, erect panicles of small white flowers 4 inches in length, and oblong, orange-colored fruits an inch long. The outside of the fruit is extremely poisonous, but the kernel is edible and forms one of the staple foods of the Maoris, who cultivate the tree for its seeds. The wood has been much used by the natives of the Chatham Islands in the making of canoes. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 233.*)

44746. ENTEROLOBIUM CYCLOCARPUM (Jacq.) Griseb. Mimosaceæ.

From Coro, Venezuela. Presented by Mr. H. M. Curran. Received May 14, 1917.

A lofty, unarmed, leguminous tree with bipinnate leaves, heads of greenish flowers, and leathery, indehiscent, pulpy, curved pods forming complete circles

about 4 inches in diameter. These pods make very good food for cattle and hogs throughout tropical America where this tree is native. The wood is said to be durable and easily worked, and the bark is used for tanning and also as a soap by the Mexicans. The tree would probably make an excellent shade tree for the southern and southwestern United States. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 226, and from *Contributions, U. S. National Herbarium*, vol. 5, p. 228.)

44747. *BRASSICA* sp. Brassicaceæ.

From Ningpo, China. Presented by Prof. Victor Hanson, Shanghai Baptist College, Shanghai. Received May 14, 1917.

Chinese name *yu ts'ai* (oil vegetable). Sent in reply to our request for the *yii ts'ai*, said to be the best variety of Chinese cabbage grown at Shanghai. Probably either *Brassica chinensis* or *B. pekinensis*.

44748. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

From Khartum, Sudan, Africa. Presented by the principal, Central Research Farm, Education Department, Sudan Government. Received May 14, 1917.

A tree 15 to 30 feet tall, with alternate, crenate, or serrate leaves up to 3 inches long, spinelike stipules, and small, greenish flowers in axillary cymes up to an inch in length. The numerous globose dark-red fruits, about half an inch in diameter, are edible and are believed to be the lotus mentioned by Mungo Park as being used for making into bread which tastes like gingerbread. A paste made of the leaves and a decoction of the root are used medicinally; the wood is tough and is used for yoke keys, and the seeds are used for making rosaries. It is native to tropical and southern Africa. Arabic name *Siddir* or *nabbak*. (Adapted from *T. R. Sim, Forests and Forest Flora of Cape Colony*, p. 177, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 1, p. 162, 1908*.)

44749 and 44750. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands, West Indies. Cuttings presented by Dr. Longfield Smith, director of the experiment station. Received May 15, 1917.

Introduced for the sugar experiment station, New Orleans, La.

44749. *Santa Cruz 12/4*. "I think this would be suitable for Louisiana on account of its rapid growth, early maturing, and richness in saccharose." (*Smith*.)

44750. *Santa Cruz 12/11*. Received without notes.

44751 to 44765.

From Venezuela. Presented by Mr. H. M. Curran. Received May 12, 1917.

44751. *ABELMOSCHUS ESCULENTUS* (L.) Moench. Malvaceæ. Okra.
(*Hibiscus esculentus* L.)

"(From Cumarebe, April, 1917.)" (*Curran*.)

44752. *ACACIA* sp. Mimosaceæ.

"(From Paraguana, April, 1917.) Small tree or low thorny shrub." (*Curran*.)

44751 to 44765—Continued.

44753. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

"(From Cerro de Santa Ana, Paraguana, April, 1917.) A common vine." (Curran.)

A West Indian leguminous vine with obovate or roundish blunt leaves, purplish flowers an inch in length, and oblong pods up to 6 inches long, containing ovoid, chestnut-colored seeds. (Adapted from *Grisbach, Flora of the British West Indian Islands*, p. 197.)

44754. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

"(From Cumarebe, April, 1917.)" (Curran.)

To be grown for comparison with other varieties.

44755. EUTERPE sp. Phœnicaceæ. Palm.

"(From Cerro de Santa Ana, Paraguana, April, 1917.) Ornamental; 30 feet high. Common on top of the mountain." (Curran.)

44756. GOSSYPIUM sp. Malvaceæ. Cotton.

"(From La Vela de Coro, April, 1917.) Wild cotton. Grows on arid lands near the sea." (Curran.)

44757. OMPHALOPHTHALMA RUBRA Karst. Asclepiadaceæ.

"(From Paraguana, April, 1917.) A common vine; used for food in Curaçao." (Curran.)

A climbing, shrubby, hairy milkweed with opposite, heart-shaped leaves nearly 3 inches long, and dark-purple, rather small flowers in the axils of the leaves. It is a native of the island of St. Martin, British West Indies. (Adapted from *H. Karsten, Florae Colombiæ*, vol. 2, p. 119, pl. 163.)

44758 to 44761. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

44758. (From Paraguana, April 8, 1917.) *Tapirama chicoa*.

"Small gray bean, with a yellow eye. An unusual marking for this species." (D. N. Shoemaker.)

44759. (From Miraca, Paraguana, April, 1917.) *Tapirama blanca*.

"Small white bean, very similar to beans received from Ceylon, Burma, and Java." (D. N. Shoemaker.)

44760. (From Paraguana, April, 1917.) *Tapirama colorado*.

"Small red bean, not like any variety of *Lima* in the American trade." (D. N. Shoemaker.)

44761. (From Miraca, Paraguana, April 8, 1917.) *Tapirama amarilla*.

"Small yellow bean; an unusual color for this species." (D. N. Shoemaker.)

44762. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

(From Paraguana, April 8, 1917.) *Tapirama pintada*.

"Small mottled beans similar in marking to *Jackson Wonder* and *Florida Butter*." (D. N. Shoemaker.)

44763. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame.
(*S. indicum* L.)

(From Paraguana, April, 1917.) *Tapirama ajonjolí*.

An erect annual plant, 2 to 3 feet high, with ovate-lanceolate leaves, rosy-white flowers, and ovoid-oblong capsules. It is a native of the East Indies and tropical Africa, but is cultivated in tropical America

44751 to 44765—Continued.

and the southern United States. The seeds are very rich in oil, which is expressed and used as a table oil and also medicinally. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 458, and from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 538.)

44764. *CLERODENDRUM LIGUSTRINUM* (Jacq.) R. Br. Verbenaceæ.

“(From Paraguana, April, 1917.) A common tree.” (*Curran.*)

44765. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.

(From Miraca, Paraguana, April 8, 1917.) *Bonchita*.

An annual rambling vine with three rhomboid-ovate stalked leaflets, white or purplish flowers in twos or threes on long axillary peduncles, and small, erect pods 3 to 5 inches in length. It is probably native to southern Asia, but is now cultivated throughout the Tropics for the seeds and fodder. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 3469.)

44766 and 44767. DOLICHOS LABLAB L. Fabaceæ.**Bonavist bean.**

From Georgetown, British Guiana. Presented by Mr. John F. Waby. Received May 19, 1917. Quoted notes by Mr. Waby.

44766. “*Var. macrocarpus*. A natural hybrid of *Park Runner* and *Vilmorin's Stringless*, which undoubtedly will prove a welcome addition to our green vegetables. It bears the largest pod of any of the ‘Lablab’ class which has yet appeared, and on that account fewer pods will be needed to form a dish. It is prolific; the pods are longer than those of either of its parents and have the width of those of the ‘Vilmorin’ bean, which till now is the widest known.

“The new bean is a much stronger grower than either of its parents, so will need more room. The seeds should be planted 5 to 6 feet apart. The stakes or trellis for it to climb on should not be more than 5 to 6 feet high, for the convenience of picking for a green vegetable. Use in the same manner as French beans before the seeds are well formed; if allowed to mature, as bonavists generally are, the seeds can be shelled in the same manner, though I consider the young green pods are the most useful, as good green vegetables are scarce.”

44767. “*Var. nankinensis*. Small white seeds.

44768. PISTACIA CHINENSIS Bunge. Anacardiaceæ. Pistache.

From China. Obtained by Mr. Edwin S. Cunningham, American consul general at Hankow, through Mr. Nelson T. Johnson, American consul at Changsha. Received April 19, 1917.

(Collected at Ninghwai, Hunan Province, November, 1916.) A beautiful Chinese tree with graceful pinnate leaves which are at first dark red, then glossy green, and finally, in autumn, becoming scarlet, purple, and yellow. Trees of previous introductions have done so well in many parts of our country that we can recommend this beautiful tree for park and avenue planting. Where the winters are not too severe it has withstood temperatures of -4° F. without injury, as at Washington, D. C. It is especially valuable for the Southern and Pacific Coast States when planted in a well-drained situation. Individual specimens sometimes live to be centuries old and attain great size.

44769. MACADAMIA TERNIFOLIA F. Muell. Proteaceæ. Macadamia.

From Sydney, Australia. Purchased from Messrs. Anderson & Co. Received May 14, 1917.

In its typical form this is a tall tree with dense foliage, the leaves being glabrous, shining, oblong or lanceolate, in whorls of three or four, and up to a foot in length. The white flowers are in racemes almost as long as the leaves. The nearly globular fruits, up to an inch in diameter, are thick shelled and contain one or two edible seeds half an inch or more in diameter; these seeds are white and crisp, with a flavor resembling that of the Brazil nut. This tree is cultivated to a small extent in southern California and southern Florida, and it has recently fruited in Cuba, where it appears to thrive. Its ornamental appearance alone makes it worthy of introduction into the warmest parts of the United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1938.)

44770 to 44772.

From Allahabad, India. Presented by Mr. William Bembower, horticulturist, Ewing Christian College. Received May 17, 1917.

44770. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"*Shirifa*. The common type found here." (*Bembower*.)

44771. DIOSPYROS sp. Diospyraceæ. Persimmon.

"This *Diospyros* is, I believe, a native of this region; I found it fruiting in December and January at Etah, in the United Provinces. The fruit is not eaten, but it promises to be a valuable stock for warmer regions or for breeding purposes." (*Bembower*.)

44772. DOLICHOS LABLAB L. Fabaceæ. Bonavist bean.

"A local bean, common in the United Provinces. A very prolific bearer, thriving in the driest seasons and producing long vines." (*Bembower*.)

A twining vine with broadly ovate leaflets, white or pinkish purple flowers, and broad flat pods 2 to 3 inches long. It is a native of India and has been cultivated since ancient times. In tropical and subtropical countries it is usually grown for human food, but in temperate regions it is more commonly known as an ornamental plant. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 1065, and from *Bulletin No. 318, U. S. Department of Agriculture*.)

44773. NANNORRHOPS RITCHIEANA (Griffith) Wendl. Phœnicaceæ. Mazri palm.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received May 18, 1917.

A low gregarious shrub, usually stemless, but sometimes with a stem 10 to 20 feet in length. The leaves, which are 2 to 4 feet long and of a grayish green color, are beaten with mallets to remove the fiber, which is used in making mats, baskets, etc. The fruit is a nearly round, 1-seeded drupe. The reddish brown wool of the petioles is impregnated with saltpeter and used as a tinder for matchlocks. This palm is a native of Baluchistan and Mekran, where it ascends to 5,500 feet. In Europe it grows best in a well-drained sandy loam and is propagated by seeds and offsets. (Adapted from *E. Blatter, Journal Bombay Natural History Society*, vol. 21, p. 72.)

44774 to 44776.

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer.
Received May 24, 1917. Quoted notes by Mr. Popenoe.

44774. *ANNONA TESTUDINEA* Safford. Annonaceæ.

Tortoise-shell custard-apple.

"(No. 123a. From the city of Guatemala, May 15, 1917.) The tortoise-shell custard-apple, from the town of El Rancho, in eastern Guatemala. It may not have been grown at this place, as it was purchased in the market, but it was probably grown somewhere in the immediate vicinity.

"This interesting anona belongs to the section *Chelonocarpus*, or hard-shell custard-apple group, established by Safford (*Journal of the Washington Academy of Sciences*, vol. 3, no. 4, Feb. 19, 1913). The tree, which has not been seen by me, is described as 12 to 15 meters high, with oblong or oblong-elliptic leaves, acuminate at the apex, and 25 to 35 cm. long.

"The fruit is more or less globose in form, about 4 inches in length, with a hard shell divided on the surface into polygonal areoles by slightly raised ridges. It strongly resembles the common custard-apple, being dull green and somewhat pruinose. The seeds, also, are quite different from those of the common custard-apple (*Annona reticulata*), being considerably larger and pointed at the apex. The flesh is white, soft, watery, free from the grittiness which is so objectionable in *A. reticulata*, sweet, and of pleasant flavor. The pulp does not adhere to the seeds in the ripe fruit.

"This species seems worthy of a trial in southern Florida. It will probably be too tender for cultivation in California, except in the most favored locations, such as Santa Barbara."

44775. *PHYLLOCARPUS SEPTENTRIONALIS* Donn. Smith. Cæsalpiniaceæ.

"(No. 124a. From El Progreso; sent from the city of Guatemala, May 15, 1917.) *Flor de mico* (monkey flower). A magnificent flowering tree found in sandy loam along watercourses near El Progreso, in eastern Guatemala, at altitudes of 1,500 to 2,000 feet. It is of broad, spreading habit, reaching a height of 40 to 50 feet, and is semideciduous at the time of flowering, which is in January and February.

"The leaves are compound, composed of three or four pairs of alternate leaflets oblong-elliptic to obovate in form, an inch to 1½ inches in length, rounded to acute at the apex, glabrous, and light green in color. During the flowering season the tree is a mass of crimson-scarlet flowers, which are produced in small clusters and are individually about an inch broad, with a tuft of crimson stamens up to 2 inches long. When in flower the tree may be compared to the royal poinciana, but the flowers are individually much smaller, and the color is deeper than in the poinciana. This tree should be given a trial in southern Florida, where it seems likely to succeed, and also in the most favored sections of southern California. As it grows along the banks of streams, it will probably demand a good deal of water."

44776. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 125a. From the city of Guatemala, May 15, 1917.) *Coyó*, *shucte*, or *chucte*. Seeds from specimens purchased in Zacapa. It is still too early for this fruit to be abundant, but the first of the season are now commencing to appear in the lowlands around Zacapa. The ones from which these seeds were taken were slender pyriform, rather pointed at the apex, over 5 inches long, and about 10 ounces in weight.

44774 to 44776—Continued.

The skin was light green, thicker than in an avocado of the West Indian type, while the flesh was pale brown, almost free from fiber, and of very nutty flavor. The seed was large in comparison with the fruit."

See also S. P. I. No. 44682 for previous introduction and description.

44777 and 44778. Gossypium spp. Malvaceæ. Cotton.

From Cristobal, Canal Zone. Presented by Mr. S. P. Verner. Received April 20, 1917.

44777. Sample No. 1.

44778. Sample No. 2.

44779 and 44780. Pandanus spp. Pandanaceæ. Screw pine.

From Honolulu, Hawaii. Plants presented by Mr. Joseph F. Rock, botanist, College of Hawaii. Received May 29, 1917.

44779. PANDANUS TECTORIUS SINENSIS Warb.

A much-branched tree 20 feet or more high, with a flexuous trunk supported by aerial roots. The light-green leaves are linear-lanceolate, terminated by a long flagellum, and are furnished with marginal spines. The variety differs from the species in having smaller leaves and larger marginal spines. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2450, and from Warburg, in *Engler, Pflanzenreich*, vol. 4, pt. 9, p. 48.)

44780. PANDANUS ROCKII Martelli.

"I brought back from Palmyra Island a number of seeds of *Pandanus rockii*. It grows in actual salt water below the low-tide mark." (*Rock*.)

A slender, erect tree, 8 to 10 m. (26 to 33 feet) in height, with bright-green leaves, large, wedge-shaped fruits 8 cm. (3 inches) long and 6 cm. (2½ inches) broad at the apex. It was originally collected on Holei Islet, Palmyra Island, in July, 1913. (Adapted from *Bulletin No. 4, College of Hawaii Publications*, p. 42, 1916.)

44781 to 44783. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received May to June, 1917. Quoted notes by Mr. Popenoe.

44781. "(No. 117. Avocado No. 29. From the finca Santa Rosa, Antigua.) *Katun*. A small, handsome avocado from the finca Santa Rosa in Antigua, Guatemala (altitude 5,100 feet). The parent tree ripened an excellent crop of fruit in the spring of 1917. A few fruits of this variety which were examined had a slightly bitter taste. It is not known whether this is a characteristic of the variety or not, but it does not seem advisable to make a general distribution until this point can be determined.

"Technically the fruit may be described as follows: Form broadly obovoid, oval, or oblong-oval; size below medium to medium, weight 10 to 14 ounces, length 3½ to 4 inches, breadth 3 to 3½ inches; base rounded to bluntly pointed, the stem inserted somewhat obliquely without depression; apex obliquely flattened, though not markedly so, slightly depressed around the stigmatic point; surface nearly smooth to lightly pebbled, glossy purplish black in color, with numerous small to large yellowish dots; skin rather thin, one-sixteenth of an inch or slightly

44781 to 44783—Continued.

less; flesh rich yellow, almost golden yellow, pale green near the skin, free from fiber or discoloration, and of fairly rich flavor, with sometimes a trace of bitterness; quality doubtful; seed small to medium in size, spherical, not over 1 ounce in weight, tight in the cavity. Ripens midseason, March to May at Antigua."

44782. "(Nos. 118, 142, 228. Avocado No. 27.) *Cabnal*. A very productive variety whose fruits are of pleasing round form, good size, and rich flavor. It gives promise of being somewhat later in ripening than most other Antiguan varieties.

"The parent tree is growing in a sitio occupied by Atanasio Salazar in the outskirts of Antigua, Guatemala, a short distance beyond the first kilometer post on the Guatemala road. The altitude is approximately 5,100 feet. The tree stands beside a small stream, with several jocote trees (*Spondias mombin* L.) close around it. Its age is unknown, but it appears to be at least 25 years old, perhaps more. It stands about 30 feet high, the trunk, about 15 inches thick at the base, giving off its first branches 10 feet above the ground. The crown is rather broad, dense, and well branched. The young branches are erect, stout, stiff, and well formed, indicating that the tree is a vigorous grower. The wood is not unduly brittle. The bud wood is excellent, the branches being of good length with the buds well placed. The eyes are large, well developed, and show no tendency to fall and leave a blind bud.

"The climate of Antigua is not cold enough to test the hardiness of Guatemalan avocados, but it may reasonably be assumed that this variety is of average hardiness for the Guatemalan race.

"The flowering season is late February and March. The tree produced a heavy crop of fruit from the 1916 blooms and set an equally heavy crop in March, 1917, to be ripened in 1918. The bearing habits of this variety give promise of being excellent. The fruit ripens in March and April, but can be left on the trees until June or even later. The ripening period may be termed midseason to late.

"The fruit is round, weighing three-fourths of a pound to a pound, rather rough, and dark green or yellowish green externally, with a skin of moderate thickness. It is attractive in appearance and of convenient and desirable size and form. The flesh is cream yellow, very oily in texture, and of rich flavor. There is a peculiar nuttiness about the flavor which is not found in the other varieties of this collection. It may, perhaps, be said to suggest the coconut. The seed is variable in size, but on the average is rather small for a round fruit. It is tight in the cavity.

"A formal description of the fruit is as follows: Form spherical; size below medium to above medium; weight 10 to 16 ounces, length $3\frac{1}{4}$ to $3\frac{3}{4}$ inches, breadth $3\frac{1}{4}$ to $3\frac{3}{4}$ inches; base rounded, the slender stem inserted slightly to one side without depression; apex flattened and slightly depressed around the stigmatic point; surface pebbled, usually rather heavily so, dull green in color, with a few small yellowish dots; skin thick, about one-eighth of an inch, coarsely granular toward the flesh, hard and woody; flesh rich cream yellow in color, with no fiber and only very slight discoloration, pale green near the skin, fairly dry, and of rich, nutty flavor; quality very good; seed rather round or

44781 to 44783—Continued.

oblate, medium sized, varying from 1 to 2 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons."

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 134, fig. 30; reprint, 1918, p. 26, fig. 30; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 62, pl. 21.

44783. "(Nos. 122, 143. Avocado No. 28.) *Cantel*. The parent tree of this variety is just coming into bearing and produced but few fruits in 1917. While it is too early to know definitely what its bearing habits will be, the character of the fruit is so unusual as to make it worth while to test the variety in the United States. Most round avocados have a medium-sized or large seed. This one, however, has an unusually small seed, and if the variety proves desirable in other respects it will be well worth cultivating. In quality it is good.

"The parent tree is growing in the finca La Candelaria, in Antigua, Guatemala. The altitude is approximately 5,100 feet. The tree has been planted to shade coffee bushes and is still young, its age not being more than 5 or 6 years. It is tall and slender in habit, about 20 feet high, with a trunk 6 inches thick at the base. As is customary in fincas, the tree has not been allowed to branch low, the first branches being more than 6 feet from the ground. The growth looks unusually strong and healthy, the young branchlets being stout, long, stiff, and well formed. The bud wood is excellent, having the buds well placed and vigorous.

"Little can be determined regarding the flowering and fruiting habits of the tree at this early day. When it was first seen, early in May, 1917, it had only three fruits on it. It may have borne more this year, as the crop had already been harvested from many of the trees in the finca. The ripening season is probably March to May.

"The hardiness of the tree can not be determined until it is tested in the United States, as it is never very cold in Antigua.

"The fruit is round, about a pound in weight, green, with a moderately thick skin. The flesh is of good color and quality and in quantity much greater than in the average round avocado, since the seed is quite small.

"The variety may be described as follows: Form oblate; size medium, weight 16 ounces, length $3\frac{1}{2}$ inches, breadth $3\frac{3}{4}$ inches; base slightly flattened, the long, slender stem inserted without depression almost in the longitudinal center of the fruit; apex flattened, slightly depressed around the stigmatic point; surface pebbled, deep yellow-green in color, with numerous minute yellowish dots; skin not very thick for this race, one-sixteenth of an inch or slightly more, hard, granular toward the flesh; flesh cream colored around the seed, becoming pale green close to the skin, very slightly discolored, with brownish fiber tracings, but with no fiber; flavor rich and pleasant; quality very good; seed very small for a round fruit, oblate, weighing less than 1 ounce, tight in the cavity, with both seed coats adhering closely to the cotyledons."

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 135, fig. 31; reprint, 1918, p. 26, fig. 31; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 63.

44784. CAMPOMANESIA FENZLIANA (Berg.) Glaziou. Myrtaceæ. Guabiroba.

From Lavras, Minas Geraes, Brazil. Presented by Mr. B. H. Hunnicutt, director, Escola Agricola de Lavras. Received May 18, 1917.

"A small Brazilian tree with foliage remarkably similar to that of some of the European oaks. It is usually 20 to 25 feet in height, though occasionally taller. The fruits greatly resemble small guavas, being orange-yellow, oblate in form, and up to an inch in diameter. The skin is thin and incloses a layer of granular, light yellow pulp which has a flavor somewhat stronger than that of the guava. The fruits are used principally for making jams and jellies. The tree should prove suitable for southern California and southern Florida." (Note of *Dorsett, Shamel, and Popenoe.*)

See also S. P. I. Nos. 37834 and 44086 for previous introductions.

44785. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Bud wood collected by Mr. Wilson Popenoe, agricultural explorer. Received June 8, 1917.

"(Nos. 132, 213. Avocado No. 12.) *Pankay*. This variety has been included in the set primarily for its probable hardiness. The parent tree is growing at an altitude of 8,500 feet, which is more than a thousand feet above the zone in which citrus trees are seen in Guatemala. Avocados are rarely found at this altitude. Several other avocado trees in the same town (Totonicapam) had been badly injured by a recent frost at the time *Pankay* was selected, but this variety had escaped practically untouched. How much may be due to situation or other circumstances, however, is not known, and not too much confidence should be placed in the superior hardiness of this variety until it has been thoroughly tested in Florida and California. Since, in addition to its probable hardiness, it is a fruit of very good quality, it can be strongly recommended for trial in the United States.

"The parent tree is growing in the patio of Jesusa v. de Camey, corner of Calle Cabanas and 10a Avenida Norte, Totonicapam. The altitude of this town is approximately 8,500 feet, perhaps a little higher. The situation is somewhat sheltered, since the tree stands in the patio of a house close to the north wall. Since the top of the tree, however, extends 10 feet or more above the roof of the house, the protection can not be of great importance, except from one point of view: The tree may have been effectively protected when young, being thus enabled to develop uninjured during the first few years of its growth, after which it was better able to withstand severe frosts. The age of the tree is said to be about 25 years; it stands 40 feet high, with a broadly oval, dense crown, the top of which has been cut out to avoid danger of its breaking in high wind and falling upon the tile roof of the house. The trunk is about 20 inches thick at the base, dividing 8 feet from the ground to form two main branches, which give off secondary branches at 20 feet from the ground. While the tree appears to be vigorous and hardy, it may be found somewhat difficult to propagate, as it does not make the best type of bud wood. The eyes are not plump, but somewhat slender, with the outer bud scales falling early, and the bud itself shows a tendency to fall at an early stage. The wood seems to be rather brittle.

"The flowering season is late April and May. The tree is quite productive, bearing its fruits often in clusters. It produced a good crop from the 1915 blooms and another good one from the 1916 blooms. Owing to the great eleva-

tion of Totonicapam and the consequent lack of heat, the fruits are very slow in reaching maturity. The season of ripening is from September until the end of the year, but the fruits which ripen at this time are those from the previous year's bloom—that is, flowers which appeared in May, 1916, developed fruits which were not fully ripe until September or October, 1917.

"The fruit is of medium size, of attractive pyriform shape, smooth, and green in color. The flesh is of good quality, free from fiber, and the seed is comparatively small. It can be considered a fruit of very good quality and desirable from other points of view than that of its probable hardness.

"Following is a formal description of this variety: Form pyriform, rather slender, and slightly necked; size medium, weight 12 ounces, length $4\frac{3}{4}$ inches, greatest breadth 3 inches; base tapering, narrow, the stem inserted almost squarely without depression; stem $3\frac{1}{2}$ inches long, stout; apex rounded, slightly depressed around the stigmatic point; surface smooth or nearly so, light green and almost glossy, with numerous yellow dots; skin moderately thick, about one-sixteenth of an inch, woody and brittle; flesh deep-cream color, changing to pale green near the skin, free from fiber, and of very rich flavor; quality excellent; seed rather small, conical, weighing about $1\frac{1}{2}$ ounces, tight in the cavity, with both seed coats adhering closely." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 125, fig. 21; reprint, 1918, p. 24, fig. 20; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 50.

44786. *CRYPTOSTEGIA GRANDIFLORA* R. Br. Asclepiadaceæ.

Palay rubber.

From Old Fort, New Providence, Bahamas. Presented by Mr. W. F. Doty, American consul, Nassau, Bahamas, who secured it from Dr. Charles S. Dolley. Received May 24, 1917.

A twining shrub, native of India, but cultivated in many places in the Tropics for the rubber obtained from the sap. It has opposite, elliptic leaves and terminal cymes of large reddish purple flowers which bloom all the year. The leaves and stems contain an abundance of latex which yields a quantity of rubber estimated at 2 per cent of the weight of the fresh plant. From the bast fiber of the inner bark a good quality of wrapping paper has been made. The seed coma furnishes a silky floss which can be made into an excellent felt. Propagation is by seeds. (Adapted from *C. S. Dolley, On the Occurrence of Palay Rubber in Mexico, India-Rubber Journal, May 20, 1911.*)

44787 to 44789.

From Ranchi, India. Presented by Mr. A. C. Dobbs, Deputy Director of Agriculture, Chota Nagpur Division. Received May 24, 1917.

44787. *BRASSICA CAMPESTRIS* SARSON Prain. Brassicaceæ. **Sarson.**

An erect annual of rigid habit, cultivated in many places in India for the seeds. There are two forms—one with erect pods and one with pendent pods, the former being the true *sarson* and the latter being found commonly only in northern Bengal and eastern Tirhut. The seed is sown in September, either broadcast or in parallel lines, usually with wheat or barley, and the plants are cut soon after the harvest of the associated crop. *Sarson* is very liable to be attacked by insects and

44787 to 44789—Continued.

blight and is quite susceptible to climatic vicissitudes. (Adapted from Watt, *Commercial Products of India*, p. 176.)

44788. *BRASSICA NAPUS DICHOTOMA* (Roxb.) Prain. Brassicaceæ. Tori.

An annual plant cultivated throughout India, especially in the lower provinces. There are two forms—one tall and rather late, the other shorter and very early. The seeds are usually brown and the same size as those of the *sarson* (*Brassica campestris sarson*). The oil content is very variable. (Adapted from Watt, *Commercial Products of India*, p. 178.)

44789. *GUIZOTIA ABYSSINICA* (L. f.) Cass. Asteraceæ.

An annual composite, native of tropical Africa, but cultivated in most of the provinces of India for the oil-producing seeds. The seed is sown from June to August and harvested in November and December. Light sandy soil is generally chosen, and the seed is drilled in rows 11 to 13 inches apart. The oil is pale yellow or orange, nearly odorless, and has a sweet taste. It is used for making paints, for lubrication, and for lighting purposes. (Adapted from Watt, *Commercial Products of India*, p. 625.)

44790 to 44792. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.

From Dundas, New South Wales, Australia. Presented by Mr. Herbert J. Rumsey. Received May 29, 1917. Quoted notes by Mr. Rumsey.

"The green and purple varieties and the crosses between them make a muddy looking jam with a peppery taste, distasteful to many; but the yellow variety makes jam of a clear amber color, which is almost free from the hot taste."

44790. "*Large Purple.* Grown from seed received recently from Livingston's. This appears to be the original type of the fruit."

44791. "*Phenomenal Large Green.* A type frequently in evidence among our seedlings."

44792. "*Phenomenal Large Yellow.* The result of our selection for six or seven years. The fruit from which this was saved is the type at which we are aiming."

44793 and 44794.

From Mustapha, Algiers, Algeria. Presented by Dr. L. Trabut. Received May 26, 1917.

44793. *ALLIUM TRIQUETRUM* L. Liliaceæ.

A bulbous plant with a 3-angled stem, common on the coast of Algeria. In its usual surroundings this plant is a rather dwarfed weed of dry texture, but it has been found that when it is transplanted to good garden soil with plenty of fresh water it produces, during the winter, large plants with white, tender, and succulent underground parts. If the green leaves are removed, the rest of the stem forms a delicate vegetable with no odor of garlic. (Adapted from Trabut, *Revue Horticole*, July 1, 1913, p. 311.)

44794. *Gossypium* sp. Malvaceæ. Cotton.

"This cotton is derived from a *Caravonica* hybrid crossed with *Mit Afifi*. For several years it has proved very prolific and fairly early. It

44793 and 44794—Continued.

has long, silky fiber of first-rate quality. It bears little or nothing the first year, but the following year is covered with bolls. It should be planted at the rate of three to five thousand plants for each 2 acres. It may remain in place four or five years. The seeds should be collected from the best plants, as this hybrid is still incompletely fixed. The plants should be started in a nursery and planted the second year." (*Trabut.*)

Caravonica is supposed to be a hybrid between kidney cotton, *Gossypium* sp., and *G. barbadense*; *Mit Afifi* is usually referred to *G. barbadense*.

44795 to 44800.

From Venezuela. Presented by Mr. Henry Pittier. Received May 29, 1917. Quoted notes by Mr. Pittier.

44795. *AMYGDALUS PERSICA* L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"(No. 7112. From Caracas, March, 1917.) A small peach, with thin, acidulous flesh, sold in the market at Caracas; collected in the neighboring mountains."

44796. *BROMELIA CHRYSANTHA* Jacq. Bromeliaceæ.

"(No. 7111. From Caracas, March, 1917.) This has been called *Bromelia chrysantha*, but it may be simple *B. pinguin*. The fruit, which is sweet acidulate and quite agreeable to the taste when mature, is sold in the market."

44797 to 44799. *GOSSYPIUM* sp. Malvaceæ. Cotton.

Introduced for the Office of Crop Acclimatization and Adaptation Investigations.

44797. "(No. 7110. From Siquire Valley, Miranda, April, 1917.) A deciduous shrub of pyramidal habit, with 4-locked fruits. It grows among bushes on alluvial flats."

44798. "(No. 7094. From Caracas, March, 1917.) Cultivated in a garden."

44799. "(No. 7109. From Caracas, March, 1917.) A pyramidal perennial shrub, 2 to 3 meters (7 to 10 feet) high, growing around houses, bushes, etc."

44800. *SOLANUM* sp. Solanaceæ.

"(No. 5972. From Caracas.) An herbaceous trailing plant, bearing edible fruits; desirable for cultivation in cool, shady places in a mild climate."

44801. *ANNONA* (*CHERIMOLA* × *SQUAMOSA*) × *RETICULATA*. *Annonaceæ*. **Cuatemoya.**

From Lamac, Philippine Islands. Cuttings presented by Mr. P. J. Wester, horticulturist in charge of the Lamac Experiment Station. Received May 19, 1917.

"No. 3685-11."

See S. P. I. Nos. 44671 to 44673 for previous introductions and description.

44802. MICROLAENA STIPOIDES (Labill.) R. Br. Poaceæ.**Meadow rice-grass.**

From Sydney, New South Wales, Australia. Purchased from Messrs. Arthur Yates & Co. (Ltd). Received May 31, 1917.

These seeds were introduced for the Office of Forage-Crop Investigations.

A perennial, erect or ascending grass, 1 to 2 feet in height, with usually rather short and very acute leaves, narrow panicles 3 to 6 inches long, and 1-flowered spikelets. It keeps beautifully green throughout the year and will live in poor soil, provided it be damp. It bears overstocking better than any other native grass and maintains a close turf. It is native in Australia and also in New Zealand. (Adapted from *Bailey, Queensland Flora*, pt. 6, p. 1872, and from *Maiden, Useful Native Plants of Australia*, p. 94.)

44803. SOLANUM TUBEROSUM L. Solanaceæ.**Potato.**

From Allahabad, India. Presented by Mr. William Bembower, horticulturist, Ewing Christian College. Received May 31, 1917.

"Potato seed produced on the farm of the Agricultural Department of the Ewing Christian College, Allahabad. Gathered in March, 1917. The variety or varieties we have here are of inferior quality generally, and we find a little difficulty in carrying them over the hot season, but we are trying to improve the local kinds." (*Bembower*.)

44804 and 44805.

From Yih sien, Shantung, China. Presented by Rev. R. G. Coonradt. Received June 1, 1917.

44804. CANNABIS SATIVA L. Moraceæ.**Hemp.**

"The hemp is planted here in March, in rich, black soil, and often irrigated. From the fiber taken from the outside of the stalk our best rope is made." (*Coonradt*.)

For the use of the Office of Fiber Investigations.

44805. POLYGONUM TINCTORIUM Lour. Polygonaceæ.

"The 'blue plant' may be common in America. When mature, it is put through a process to obtain the dye with which all of our blue clothes are colored." (*Coonradt*.)

An annual herb commonly cultivated in dry fields in China and Japan, growing to a height of 1 to 2 feet. The leaves are variable in shape, ranging from long narrow to short and oval, and the pink flowers are borne in spikes. The dried leaves are made into "indigo balls," from which the dye is obtained. (Adapted from *Useful Plants of Japan*, p. 101.)

44806. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ. Sword bean.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, horticultural division, Gizeh Branch, Ministry of Agriculture. Received June 1, 1917.

A robust, woody, perennial climbing plant, with leaves composed of three roundish leaflets, 2 to 6 inches long, and axillary racemes of dark-purple flowers. The scimitar-shaped pods are about a foot long and contain numerous red or white seeds which resemble large beans. The young pods are sliced and boiled for table use and are also pickled. Propagation is by seeds. (Adapted from *Lindley, Treasury of Botany*, vol. 1, p. 212, and from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 207.)

44807. ORYZA SATIVA L. Poaceæ.**Rice.**

From Chosen (Korea). Presented by Miss Katherine Wambold, Yunmotkol, Keijo, through Mrs. M. W. Spaulding, Washington, D. C. Received June 1, 1917.

"*Pepsi or pay*. Planted in water; when about a month old it is transplanted to deeper water; then, later, weeding is done, fertilizing having been done before the seed is planted. It is a difficult crop to raise." (*Wambold*.)

44808 to 44814.

From Chile. Presented by Mr. G. F. Arms, Coquimbo, Chile. Received June 2, 1917. Quoted notes by Mr. Arms.

44808 to 44813. FRAGARIA CHILOENSIS (L.) Duchesne. Rosaceæ.**Strawberry.**

Introduced for the Office of Horticultural and Pomological Investigations.

44808. "Wild strawberries from near Temuco, Chile; secured by Mr. George T. Smith."

44809. "Conical strawberries from Mr. W. D. Carhart, Concepcion, Chile."

44810. "*Montañescas* (?). Common large berries, with deep-set seeds, from Mr. W. D. Carhart, Concepcion, Chile."

44811. "Red, shining seeds. From Tome, near Concepcion. Secured by Mr. W. D. Carhart."

44812. "*Montañescas*. Deep-set seeds; from Mr. W. D. Carhart."

44813. "Cultivated strawberries, with large seeds well on the surface of the berry. From 'Granideros,' the farm of Mr. Celio Rioseco, at Collepulli, south of Concepcion, Chile."

44814. MESEMBRYANTHEMUM CHILENSE Molina. Aizoaceæ.**Doca.**

"*Doca*, or *frutillas del mar* (strawberries of the sea). Collected on the sea beach near Serena, Chile."

A glabrous, succulent plant about a meter ($3\frac{1}{4}$ ft.) in length, with opposite, triangular, green leaves from 4 to 7 cm. ($1\frac{1}{2}$ to 3 in.) long, solitary purplish flowers, and fleshy fruits. It grows flat in the sand on the sea-coast from Coquimbo to Rio Bueno, Chile. The fruit is edible, having an agreeable taste, but if eaten in abundance has a purgative effect. (Adapted from A. Murillo, *Plantas Medicinales du Chili*, p. 99.)

44815. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

From Turkestan. Collected and presented by Mr. Philip M. Lydig, New York City. Received June 4, 1917.

"These melons are delicious six months after being taken from the vine." (*Lydig*.)

44816. CAESALPINIA MELANOCARPA Griseb. Cæsalpiniaceæ.

From Paraguay. Presented by Mr. C. F. Mead, Asuncion, Paraguay. Received June 4, 1917.

"*Guayacan*. From Chaco Paraguayo, near Asuncion, Paraguay. A very handsome and useful timber tree, though for the most part useless in Chaco through being unsound. In many respects it corresponds to teak. The bark has medicinal properties. It may do well in the southern United States." (*Mead*.)

44817. VOANDZEIA SUBTERRANEA (L.) Thouars. Fabaceæ.

From Umkomaas, Natal, Union of South Africa. Presented by Rev. H. D. Goodenough. Received June 5, 1917.

"*Woandzu*. The natives plant these when the first rains come, on new ground, preferably a sandy loam. They look very much like peanuts, but in cooking they are boiled in their shells." (*Goodenough*.)

A yellow-flowered annual with upright, long-stalked compound leaves composed of three leaflets. Like the common peanut, the flower stalks bend down to the earth after flowering, and the pods are ripened underneath the ground. In the requisite cultural conditions the plant much resembles the common peanut. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 232.)

44818 to 44822.

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received May 4, 1917. Quoted notes by Mr. Popenoe.

44818. CLEOME sp. Capparidaceæ.

"(No. 104a. From Purula, Department of Baja Vera Paz.) Seeds of *alcochofli*, an herbaceous plant found in the mountains at an altitude of about 6,000 feet. It sends up slender stems to a height of about 6 feet, producing large numbers of delicate pale blue and white flowers. The leaves and stems, when crushed, have a pungent odor."

44819. DAHLIA EXCELSA Benth. Asteraceæ. Dahlia.

"(No. 105. From Purula, Department of Baja Vera Paz.) Cuttings of a double pink variety of the common tree dahlia. It is pale lilac, the same color as the typical form, but unlike the latter, which has large single flowers, this variety has double flowers resembling in form some of the common garden dahlias of the North. The plant grows to a height of 15 feet, or even more, and blooms during a long period. It is cultivated in the gardens of the Indians, but is not common. In the Pokom dialect it is called *shikhor*; in Kekchi *tzoloh*."

44820. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

"(No. 87a. Seeds of avocado No. 15 [S. P. I. No. 44439] from the finca Santa Lucia, Antigua.) These seeds are to be grown and distributed as choice seedlings to those who wish to plant a seedling tree on the possibility that it may become a valuable new variety. It will be interesting to watch these trees when they come into fruit and to compare their fruits with those of their parent, avocado No. 15. The latter is a very choice variety."

44821. MAXIMILIANEA VITIFOLIA (Willd.) Krug and Urb. Cochlosper-
(*Cochlospermum hibiscoides* Kunth.) [maceæ.]

"(No. 107a.) *Tecomasuche*. Seeds of a common shrub or small tree of eastern and central Guatemala, from the highlands at about 4,000 feet down to a level of 1,000 feet or perhaps lower. The plant occasionally reaches a height of 35 feet, is always stiff, rather sparsely branched, and bears stout branchlets, which usually carry leaves only toward their tips. The plant is leafless from December or January to May in most sections; at this period it produces at the ends of the branchlets numerous large yellow flowers, single, brilliant in color, with a deep-orange center. They are followed by oval seed pods as large as a hen's egg."

44818 to 44822—Continued.

44822. MAURANDIA SCANDENS (Cav.) Pers. Scrophulariaceæ.

"(No. 108a. From Purula, Department of Baja Vera Paz.) Seeds of a slender creeper from a garden. It has delicate foliage and funnel-shaped flowers about an inch broad and lavender in color. Since it is found at an altitude of over 5,000 feet, it should be sufficiently hardy to grow in southern California as well as in Florida."

44823. PIMENTA ACRIS (Swartz) Kosteletsky. Myrtaceæ.

Bay tree.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received June 4, 1917.

A small, erect tree, the leaves of which are very aromatic, yielding by distillation an oil which is used in the preparation of bay rum. It is a native of the West Indies, but is cultivated in other tropical places also. The dried leaves and the bay rum form an important export from St. Thomas and other West Indian Islands. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 261.)

44824. PIMENTA OFFICINALIS Lindl. Myrtaceæ.

Allspice.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received June 5, 1917.

A small tree with smooth, grayish bark, native to Central America and the West Indies, but cultivated in many places throughout the Tropics for the berries. These when ripe are glossy black and the size of small peas, but when dried before ripening are the allspice or pimento of commerce. It is considered to yield best in a hot and rather dry climate and prefers a loose loam or an alluvial, well-drained soil. At the present time Jamaica is the only place from which allspice is exported. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 259.)

44825. ERYTHROCHITON sp. Rutaceæ.

From Para, Brazil. Presented by Mr. J. Simão da Costa. Received June 5, 1917.

"A rutaceous plant which may be called a botanical curiosity, from the queer way in which its flowers are borne. It prefers a warm, moist atmosphere and not too much light." (*Da Costa.*)

The flowers of *Erythrochiton hypophyllanthus*, a related species, are borne on the midribs of the leaves.

Received as *Erythrochiton paraensis*, for which no place of publication has yet been found.

44826 to 44828. HOLCUS SORGHUM L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From Salisbury, Rhodesia, Africa. Presented by Mr. J. O. S. Walters, assistant agriculturist, Department of Agriculture. Received June 5, 1917. Quoted notes by Mr. Walters.

Introduced for the Office of Forage-Crop Investigations.

44826. "The cultivated variety."

44827. "The wild variety."

44828. "Probably a cross. All of these native sorghums cross readily."

44829. BRASSICA OLERACEA VIRIDIS L. Brassicaceæ.

From Jersey Island, Channel Islands, Great Britain. Presented by Mr. D. R. Bisson, St. John. Received June 6, 1917.

"*Jersey tree kale or cow cabbage.* In this section Jersey kale is sown at the end of summer, then transplanted to 2 or 3 feet apart about November. It must be protected to stand continued severe frost. Its stalk attains a height of 8 to 12 feet. The leaves of the growing plant are used for feeding cattle and pigs." (*Bisson.*)

44830. ZEA MAYS L. Poaceæ.**Corn.**

From Johannesburg, Union of South Africa. Purchased from the Agricultural Supply Association, for the use of the Office of Cereal Investigations. Received May 9, 1917.

"*Izotsha* maize is a strain (apparently of *Boone County White*) which is successfully grown in a limited area on the south coast of Natal, bordering Pondoland, an area which is subject to great extremes of drought and heat during the summer. It is claimed by farmers in that locality that it is the only breed of maize which has been found satisfactory in that particular vicinity, but as they are isolated from the main maize belt of South Africa it is quite possible they have not tried some of the more drought-resistant types which are now being grown in other parts of the Union. (*Letter of J. Burt Davy, dated August 18, 1917.*)

44831 to 44838.

From Sydney, Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens. Received June 8, 1917.

44831. CHORIZEMA CORDATUM Lindl. Fabaceæ.

A tall, slender, glabrous, evergreen shrub, 7 to 10 feet high, with weak branches, more or less prickly leaves about 2 inches in length, and numerous red flowers. It is propagated from cuttings and may be grown in the open in southern California and southern Florida, being excellent for training on pillars and trellises. In colder regions it is an attractive plant for the cool greenhouse. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 752.*)

44832. CYTISUS STENOPETALUS (Webb) Christ. Fabaceæ.**Gacia.**

A shrub or small tree, up to 20 feet in height, with crowded, slender-stemmed trifoliate leaves, silky pubescent on both sides, or sometimes smooth on the upper surface. The bright yellow, slightly fragrant flowers occur in short terminal racemes, and the flat dehiscent pod contains from five to seven seeds. It is a native of the Madeira Islands, and is cultivated there and in Australia as an ornamental. In the Canary Islands it is said to be used as fodder. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 949*, and from *Report of the Director of the Botanic Gardens, Sydney, Australia, 1916, p. 5.*)

44833. EUGENIA CYANOCARPA F. Muell. Myrtaceæ.

Although the fruits of this species are inferior to those of the *Eugenia*s ordinarily cultivated (*Eugenia uniflora* and *E. dombeyi*), yet they may have some economic importance in the future. (Adapted from *Maiden, Report of the Sydney Botanic Gardens, 1915.*)

44831 to 44838—Continued.

44834. *ISOTOMA AXILLARIS* Lindl. Campanulaceæ.

An erect perennial plant, 6 to 12 inches high, which flowers the first year, appearing to be annual, but forming at length a hard rootstock. It has a few spreading branches, irregularly pinnatifid linear leaves 2 to 3 inches long, and large, bluish purple axillary flowers. It is a native of Australia, where it is now cultivated as an ornamental. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 3, p. 1707.*)

44835. *PERSOONIA MYRTILLOIDES* Sieber. Proteaceæ.

A much-branched spreading shrub about 4 feet high, with rigid, oblong-lanceolate leaves about an inch in length and axillary flowers nearly half an inch long. It is a native of the Blue Mountains in New South Wales. (Adapted from *Bentham and Mueller, Flora Australiensis, vol. 5, p. 401.*)

44836. *PETROPHILA PULCHELLA* (Schrud.) R. Br. Proteaceæ.

An erect shrubby plant, with alternate, much-divided threadlike leaves and a conical head of small white flowers. It is a native of Australia, where it is sometimes cultivated as an ornamental. (Adapted from *Curtis's Botanical Magazine, vol. 21, pl. 796, as Protea pulchella.*)

44837. *TELOPEA SPECIOSISSIMA* (J. E. Smith) R. Br. Proteaceæ.

Waratah.

A stout, erect, glabrous shrub 6 to 8 feet high, with leathery, cuneate-oblong leaves 5 to 10 inches long and very handsome crimson flowers in dense heads or racemes 3 inches in diameter. The fruit is a leathery, recurved follicle 3 to 4 inches long, containing 10 to 20 seeds. It is native to New South Wales. (Adapted from *Bentham and Mueller, Flora Australiensis, vol. 5, p. 534.*)

44838. *VITTADINIA TRILOBA* (Gaud.) DC. Asteraceæ.

(*V. australis* A. Rich.)

An herbaceous plant, either erect and apparently annual or with diffusely ascending stem from a perennial woody base, usually not more than a foot high. The leaves are entire or coarsely three lobed, and the purplish flower heads are solitary and terminal. It is a native of southern Australia and might be useful as an ornamental in borders. (Adapted from *Bailey, Queensland Flora, pt. 3, p. 811.*)

44839. *CACARA EROSA* (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)

From Mayaguez, Porto Rico. Presented by Mr. C. F. Kinman, horticulturist, Agricultural Experiment Station. Received June 8, 1917.

"*Habilla.*" A shrubby, twining, tuberous-rooted vine with trifoliolate leaves, reddish flowers in racemes up to a foot in length, and straight pods 6 to 9 inches long, containing 8 to 12 seeds. It is cultivated throughout the Tropics for the sake of the edible roots, which are prepared and eaten like potatoes or subjected to a process for extracting the starch. This starch is pure white and is said to be equal in every respect to that obtained from arrowroot. It is very palatable and is used in making custards and puddings. The powdered tubers make a very excellent flour. Although the ripe beans are poisonous, the pods are not and when young are eaten like string beans. In Florida and in the island of Mauritius this bean is used as a cover crop.

For an illustration of the yam bean as a cover crop, see Plate VIII.

44840. SISYRINCHIUM sp. Iridaceæ.

From Guatemala. Plant collected by Mr. Wilson Popenoe, agricultural explorer. Received June 8, 1917.

"(No. 135. May 28, 1917.) A flowering plant from the hillsides near Momostenango, in the Department of Totonicapam, at an altitude of 7,500 feet. It grows to a height of about 2 feet, with slender, grasslike leaves. In May it produces flower stalks up to about 2½ feet high, each bearing several pale-blue flowers about an inch in diameter, with six lanceolate petals. It is called in Spanish *Flor de Mayo* (*Mayflower*). This should be adapted to cultivation in California and Florida. It seems to like a heavy soil." (*Popenoe.*)

44841. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Oran, Salta, Argentina. Presented by Mr. S. W. Damon. Received June 9, 1917.

"Seeds of *Annona cherimola* from rather good fruit which I ate a few days ago. The trees which bore the fruit withstood, last winter, a temperature of about 15° F." (*Damon.*)

44842. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

From Durban, Natal, Union of South Africa. Presented by Mr. William W. Masterson, American consul. Received June 8, 1917.

Mankataan. A melon much cultivated throughout Natal for use as cattle feed. It is exceptionally tough, enduring rough handling and keeping for six months after ripening without spoiling; but, at the same time, it is very watery and makes an excellent green fodder for live stock, especially when mixed with such feed as alfalfa hay or cornstalks. It is also very suitable for jam making, some of the Cape Colony firms using large quantities for this purpose. One pound of seed will plant 2 or 3 acres, and as much as 120 tons of melons has been taken from a single acre. It might be suitable for the semiarid regions of the United States. (Adapted from *William W. Masterson, consular report, April 18, 1917.*)

44843. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Job's-tears.

From Chosen (Korea). Presented by Miss Katherine Wambold, Yunmot-kol, Keijo, through Mrs. M. W. Spaulding, Washington, D. C. Received June 1, 1917.

"*Yulé moo.* Grows in ordinary fields. Made into meal by mixing with water, then draining, drying, and pounding. When mixed with water and salt it is made into a kind of bread." (*Wambold.*)

This variety might be called the cultivated edible Job's-tears, and it includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what has been called an annulus. In the central provinces of India, among the aboriginal tribes, this grain forms an important article of food. It has been introduced into Japan, where the seeds are pounded in a mortar and eaten as meal. (Adapted from the *Agricultural Ledger, No. 13, p. 217, 1904.*)

44844. CARPINUS ORIENTALIS Mill. Betulaceæ.**Oriental hornbean.**

From Petrograd, Russia. Presented by Dr. A. Fischer de Waldheim, director, Jardin Botanique de Pierre le Grand. Received June 5, 1917.

A small tree or large shrub, up to 20 feet high, having ovate, dark glossy-green leaves, 1 to 2 inches long, with doubly dentate margins. The staminate catkins are up to three-quarters of an inch in length, and the exposed nuts are about one-sixteenth of an inch long. It is a native of southeastern Europe and Asia Minor and is cultivated in European gardens merely as an interesting rarity. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 296.)

44845. RUBUS LINEATUS Reinw. Rosaceæ.

From Lawang, Java. Presented by Mr. M. Buysman. Received June 9, 1917.

A stout, semierect herb with softly pubescent branches, straight prickles or none at all, and compound leaves composed of three to five leathery, often doubly serrate leaflets up to 5 inches in length and $2\frac{1}{2}$ inches in width. The flowers occur either in short axillary heads or in elongated terminal panicles, and the berries are red. It is a native of the Sikkim Himalayas, where it is found at altitudes ranging from 6,000 to 9,000 feet. It is very variable in the size of the flowers and the width of the leaflets. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

44846 to 44854.

From Avondale, Auckland, New Zealand. Presented by Mr. H. R. Wright. Received June 9, 1917.

44846. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

An evergreen, semiwoody plant, native to Peru. Cultivated throughout the Tropics for the edible, ovoid, smooth-skinned fruits which are produced in hanging clusters at the ends of the branches. When mature these fruits are reddish yellow, with a subacid pulp of an agreeable flavor; although pleasant when eaten fresh, they are used chiefly for stewing or for jam or preserves. The tree is a quick grower, commencing to bear when about 2 years old, and thrives best on deep soil. Propagation is by seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, ed. 2, p. 194.)

44847. DOYALIS CAFFRA (Hook. and Harv.) Warb. Flacourtiaceæ.

(*Aberia caffra* Hook. and Harv.)

Umkolo.

"Fruits used for jams and jellies; the plant is grown for hedges. It is very prickly and is hardy in New Zealand." (*Wright*.)

A shrub or small tree, with pale-green leaves $1\frac{1}{2}$ inches long and up to an inch in width. The edible fruit resembles a small yellowish apple and is so exceedingly acid when fresh that it is said to be used without vinegar as a pickle. It is a native of tropical Africa, but has been introduced into southern California and southern Florida. (Adapted from *The Pacific Garden*, August, 1914.)

44848 and 44849. LEPTOSPERMUM SCOPARIUM Forst. Myrtaceæ.

Manuka.

"Very hardy. Used for firewood, as it gives great heat. Very pretty when in flower. Grows 6 to 10 feet high." (*Wright*.)

One of the most abundant of New Zealand shrubs, reaching occasionally a height of 30 feet, with hard, leathery, sharp-pointed leaves and

44846 to 44854—Continued.

white or pinkish, odorless flowers up to three-quarters of an inch in width. This plant flowers so profusely that the entire country appears as though covered with snow. The entire plant is very aromatic, and the leaves have been used for making tea. The wood is used for fences and firewood. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 272.)

44848. (No. 1.)

44849. (No. 2.)

44850. *NAGEIA EXCELSA* (D. Don.) Kuntze. Taxaceæ.
(*Podocarpus dacrydioides* A. Rich.)

"This is the one tree exclusively used in this country for making butter boxes, the wood being odorless and of a nice white color. The tree grows very tall and often has a trunk 5 or 6 feet in diameter." (Wright.)

A tall tree, often branchless for 70 or 80 feet, with flat, bronze-colored young leaves, which become green and scalelike when mature. The very small catkins are borne on the tips of the branchlets, and the fruit is set upon a fleshy red receptacle which is eaten by the Maoris. The tree is native to New Zealand, where it is called by the Maori name *Kahikatea*. It furnishes a light-colored, very heavy timber which is well suited for making paper pulp. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 70, as *Podocarpus dacrydioides*.)

44851. *NAGEIA FERRUGINEA* (G. Benn.) Kuntze. Taxaceæ.
(*Podocarpus ferruginea* G. Benn.)

Miro.

A large tree with gray or grayish black bark which peels off in large flakes; native to New Zealand. It has narrow, pointed leaves, axillary dioecious flowers, and bright-red fruits about the size of a small plum. The native pigeons are very fond of the *miro* berries and become very fat and lazy from feeding on them. The fruits have the odor and taste of turpentine and ripen in July and August. The timber is hard and rough and is not easily worked, nor is it especially durable. The gum which oozes from the tree possesses healing properties. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 68, as *Podocarpus ferruginea*.)

44852. *PASSIFLORA* sp. Passifloraceæ.

Granadilla.

"Bell-apple or Indian passion fruit. A delicious fruit requiring tropical heat." (Wright.)

44853 and 44854. *PASSIFLORA EDULIS* Sims. Passifloraceæ.

Purple granadilla.

44853. "*Fiji*."

44854. "*Giant*. An improved strain of the common passion fruit as grown in New Zealand and Australia. Largely grown commercially. Will grow wherever frosts are not too heavy in winter." (Wright.)

44855. *ACHIRAS ZAPOTA* L. Sapotaceæ.
(*A. sapota* L.)

Sapodilla.

From Curaçao, Dutch West Indies. Presented by Mr. H. M. Curran. Received June 11, 1917.

"*Nispero*. From very large, choice fruits." (Curran.)

44856. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.***(P. gratissima Gaertn. f.)*

From Guatemala. Budwood collected by Mr. Wilson Popenoe, agricultural explorer. Received June 12, 1917.

"(Nos. 146, 193, 221. Avocado No. 30.) *Tertoh*. A famous variety from Mixco, near the city of Guatemala, noted for its large size and excellent quality.

"The parent tree is growing in the sitio of Leandro Castillo, just above the plaza of Mixco, at an altitude of approximately 5,700 feet. The tree is said by the owner to have been grown by his grandfather from a seed brought from Moran, a small village about 10 miles distant. While its age is not definitely known, it is estimated at about 60 years. It is about 25 feet high, broad and spreading in habit, with a trunk 15 inches thick at the base, branching 7 feet from the ground to form a dense crown fully 30 feet broad. A peculiarity of the tree is its very brittle wood. This may be against the variety in California and Florida, where strong winds occasionally do much damage. The growth seems to be vigorous, and the budwood is very satisfactory, the twigs being stout, well formed, and supplied with vigorous buds.

"The climate of Mixco is cool, but not cold enough to test the hardiness of the variety. This can only be determined by a trial in the United States.

"The tree flowers in March. According to the owner, it has not borne as well in recent years as formerly. He attributes this to the fact that the tree is getting old, but it seems in addition to have been weakened by the attacks of insects. No fruits were produced from the 1916 blooms. The 1917 blooms resulted in a good crop, but many of the fruits dropped to the ground when nearly full grown. Upon examination they appeared to have been attacked by some insect, whose burrows could be seen toward the base of the fruit. The season of ripening is said to be from February to April, the fruits being at their best in March. They can, however, be picked as early as January. Toward the end of the season they become very rich in flavor.

"The fruit is long and slender, tending toward pyriform. It weighs as much as 3 pounds in some instances. It is deep purple in color when fully ripe and has a rather thin skin (for this race) and deep cream-colored flesh of very rich flavor. The seed is very small in comparison to the size of the fruit.

"An American relates that he once brought a fruit from the tree to his home in the city of Guatemala, where it sufficed to make salads for two meals for a household of 10 people.

"The variety may be formally described as follows: Form oblong to slender pyriform; size extremely large, weight 28 to 36 ounces, and occasionally up to 48 ounces, length 7 to 8½ inches, greatest breadth 3¾ to 4¼ inches; base broad to narrow, sometimes pointed, the slender stem about 5 inches long inserted slightly obliquely without depression; apex rounded; surface nearly smooth, deep dull purple in color with numerous russet dots and patches; skin moderately thick, about one-sixteenth of an inch or slightly more, coarse, granular and woody; flesh cream yellow in color, free from fiber or discoloration and of fine texture; flavor rich and pleasant; quality excellent; seed very small, slender conical in form, about 1½ ounces in weight, tight in the seed cavity, with both seed coats adhering closely to the cotyledons." (*Popenoe*.)

See also Exploring Guatemala for Desirable New Avocados, Annual Report of the California Avocado Association, 1917, p. 135, fig. 32; reprint, 1918, p. 26, fig. 32; and The Avocado in Guatemala, U. S. Department of Agriculture Bulletin No. 743, p. 64, pl. 22.

For an illustration of the parent tree of the *Tertoh* avocado, see Plate IX.



THE PARENT TREE OF THE TERTOHO AVOCADO.

(*Persea americana* Mill., S. P. I. No. 44856.)

The Tertofo is one of the largest varieties of Guatemalan avocados discovered by Mr. Wilson Popenoe during his 16 months' exploration of Guatemala. The fruits (two of which are held by Mr. Castillo) are large, sometimes weighing 3 pounds; the seed is comparatively small, and the flesh is a rich yellow color and of a nutty flavor. It is hoped that this variety will prove to be a good bearer in this country. (Photographed by Mr. Popenoe, in the grounds of Mr. Leandro Castillo, Mixco, Guatemala, December 4, 1917; P17470FS.)



THE GUAYACAN, OR "LIGNUM-VITÆ," AN ORNAMENTAL TREE FROM GUATEMALA.

(*Guaiacum guatemalense* Planch., S. P. I. No. 44558.)

In Guatemala, according to Mr. Wilson Popenoe, this species forms a shrub, or sometimes a small tree, with evergreen foliage and attractive lavender-purple flowers, which are so showy as to make the plant conspicuous from a distance. It furnishes the extremely hard wood of commerce and appears to be hardy in southern Florida. It is quite distinct from the native Florida species, *G. sanctum*, which also deserves to be cultivated as an ornamental. The specimen shown here is only 3 years old. (Photographed by David Fairchild, at Buena Vista, Fla., March 28, 1919; P2534FS.)

44857. NEPHROLEPIS sp. Polypodiaceæ.**Fern.**

From Guatemala. Plants collected by Mr. Wilson Popenoe, agricultural explorer. Received June 25, 1917.

"(No. 147. June 9, 1917.) Ferns collected in the forest at Quirigua, where they were found growing in the leaf axils of the corozo palm (*Attalea cohune* Mart.)." (*Popenoe.*)

Introduced for the monographic study of Mr. R. C. Benedict, of the Brooklyn Botanic Garden.

44858. GUAIACUM GUATEMALENSE Planch. Zygophyllaceæ.**Guayacan.**

From Guatemala. Collected by Dr. F. S. Johnson and sent through Mr. Wilson Popenoe, agricultural explorer. Received June 25, 1917.

"(No. 145a. From Zacapa, June 5, 1917.) The *guayacan*, sometimes called by Americans *lignum-vitæ*, is found in abundance upon the plains of the lower Motagua Valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree, sometimes attaining 30 feet in height, usually somewhat spreading in habit, with a trunk sometimes gnarled and twisted and having slender branches. The leaves are small and delicate. Toward the end of the dry season, i. e., in February or March, the tree comes into flower, and it is then a mass of lavender purple, distinguishable for long distances across the plains. It remains in bloom for several weeks.

"The wood is exceedingly hard and, though difficult to work, is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish.

"The tree thrives in a warm climate with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost can not be stated, but it seems likely that it may succeed in parts of California and Arizona and perhaps also in Florida. Small trees often flower profusely. It should be given a trial as an ornamental in the regions mentioned." (*Popenoe.*)

For an illustration of the guayacan as grown in Florida, see Plate X.

44859 to 44864.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 11, 1917.

44859. ALANGIUM CHINENSE (Lour.) Rehder. Cornaceæ.
(*Marlea begoniaefolia* Roxb.)

"A tree, hardy here, but it loses its leaves in winter; this might not happen in a warmer climate." (*Proschowsky.*)

A tall tree, up to 60 feet in height, with ovate, entire or slightly lobed leaves about 8 inches in length, and cymes of small, whitish, fragrant flowers. It is a native of Africa and southern and eastern Asia. This tree might be grown in the extreme southern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 1, p. 243, as *Alangium begoniaefolium.*)

44860. BOEHMERIA MACROPHYLLA D. Don. Urticaceæ.

A pretty shrub with narrow dentate leaves 6 to 12 inches in length and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to 4,000 feet. The wood is light reddish brown and moderately hard and yields a good fiber, which is used for ropes and fishing lines. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658.)

44859 to 44864—Continued.

44861. *BOEHMERIA PLATYPHYLLA* D. Don. Urticaceæ.

A very common shrub, growing in ravines in the tropical and sub-tropical Himalayas. It has thin grayish brown bark, very variable leaves 3 to 9 inches long, and simple or branched spikes of small globular flower clusters. The wood is reddish brown and moderately hard. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658.)

44862. *MEIBOMIA TILIAEFOLIA* (Don) Kuntze. Fabaceæ.(*Desmodium tiliaefolium* Don.)"Hardy and more or less ornamental." (*Proschowsky*.)

A large deciduous shrub, with slender, terete branches, thick, green, trifoliate leaves about 4 inches long, and red flowers in lax racemes often a foot in length. It is a native of the Himalayas, at altitudes ranging from 3,000 to 9,000 feet. The bark yields an excellent fiber, extensively employed in rope making; the leaves are good fodder, and the roots are used medicinally as a tonic and diuretic. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 168, and from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 83.)

44863. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

A pretty shrub, with greenish gray bark and handsome, large, yellow flowers in rather dense racemes. The wood is white, with irregular gray heartwood. It is a native of the Himalayas at altitudes above 7,000 feet and is sometimes grown as an ornamental in European gardens. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 229.)

44864. *TRACHYCARPUS MARTIANUS* (Wall.) Wendl. Phœnicaceæ. Palm."Quite hardy and ornamental here." (*Proschowsky*.)

A tall palm, with a slender trunk 20 to 50 feet high, naked for most of its length, being clothed beneath the crown with persistent leaf sheaths. The rigid, leathery, roundish leaves are 4 to 5 feet in diameter and are cut about halfway down into linear 2-lobed segments. The flowers are yellow, and the one to three dull blue drupes are half an inch long. It is a native of the temperate parts of the Himalayas, at altitudes of 4,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

44865 to 44884.

From tropical America. Presented by Mr. H. M. Curran. Received June 6, 1917.

44865. *ACACIA VILLOSA* (Swartz) Willd. Mimosaceæ.

"(Curaçao, Dutch West Indies, March 9, 1917.) *Watapaana sjimaron*. A shrub or tree of rapid growth; used for firewood." (*Curran*.)

See S. P. I. No. 44452 for description.

44866. *ACHRAS ZAPOTA* L. Sapotaceæ.

Sapodilla.

(*A. sapota* L.)

"(Curaçao, Dutch West Indies, March, 1917.) Seeds from the best and largest *nispero* I have ever eaten." (*Curran*.)

44867. *CAPPARIS* sp. Capparidaceæ.

"(Urumaco, Venezuela, May, 1917.) A tree with large oval dark-green leaves. Fruits reported to be edible." (*Curran*.)

44865 to 44884—Continued.

44868. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

"(Curaçao, Dutch West Indies, March, 1917.) Seeds of a medium-quality papaya sold in the market here." (Curran.)

44869. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"(Curaçao, Dutch West Indies, March, 1917.) The watermelons of Curaçao are the best I have tasted in the Tropics." (Curran.)

44870. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

"(Curaçao, Dutch West Indies, March 9, 1917.) Muskmelon from the Curaçao market; of fair quality." (Curran.)

44871 to 44874. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

44871. "(Altagracia, Venezuela, May, 1917.) *Algodon de Peru*. Grown as a commercial crop which sells at the rate of \$20 for 500 pounds." (Curran.)

44872. "(Altagracia, Venezuela, May, 1917.) *Algodon moreno*. Commercial cotton, grown and manufactured in the same region." (Curran.)

44873. "(Los Quemazons, Venezuela, May, 1917.) *Algodon de Peru*. Commercial crop." (Curran.)

44874. "(Los Quemazons, Venezuela, May, 1917.) *Algodon moreno*. Commercial crop (?)." (Curran.)

44875. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Mais chiquito*. Used for making meal." (Curran.)

44876. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Klein boontje*." (Curran.)

"Small forms of the large flat Lima bean. The shape, color, and markings are like types in this country. They may be either the bush or the pole form." (D. N. Shoemaker.)

44877. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Klein boontje*." (Curran.)

"Probably the variety known as *Dutch Caseknife*." (D. N. Shoemaker.)

44878. *RUPRECHTIA FAGIFOLIA* Meisn. Polygonaceæ.

Duraznillo.

"(La Estacadita, near Sabanita de Coro, Venezuela, May, 1917.) *Komari*. A small tree." (Curran.)

A South American tree with smooth bark which, in renewing itself each year, wrinkles in a peculiar way, giving the tree a characteristic appearance. In the spring it is covered with yellowish flowers which later become pinkish, making the tree very ornamental. The wood is of no commercial use, so far as is known. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 83.)

44879. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

(*S. indicum* L.)

"(Willemstad, Curaçao, Dutch West Indies, March 9, 1917.) *Ajonjoli*. Sold in the market; for making sweetmeats." (Curran.)

See S. P. I. No. 44763 for description.

44865 to 44884—Continued.

44880 to 44882. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"(Market, Willemstad, Curaçao, Dutch West Indies, March, 1917.) *Boontje del Baliza*." (Curran.)

Descriptive notes by Mr. W. J. Morse, Office of Forage-Crop Investigations, Bureau of Plant Industry.

44880. "No. 1. A red cowpea, quite similar to our *Red Ripper*."

44881. "No. 2. A clay-colored cowpea, resembling some of our medium-maturing Clay varieties."

44882. "No. 3. A speckled cowpea, resembling our *Whippoorwill* variety."

44883. *MELICocca BIJUGA* L. Sapindaceæ.

"(Sabanete de Montiel, Venezuela, May, 1917.)" (Curran.)

44884. *MIMOSA* sp. Mimosaceæ.

"(La Estacadita, near Sabanita de Coro, Venezuela, May, 1917.) *Cabuderõ*. A common, small, leguminous tree with white flowers." (Curran.)

44885. *PRUNUS SALICIFOLIA* H. B. K. Amygdalaceæ. Capuli.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received June 12, 1917. Quoted notes by Mr. Popenoe.

"(No. 128a. May 16, 1917.) The wild cherry of the Guatemalan highlands, called *cereza* in Spanish and *capulí* in the Kiché Indian dialect. The tree is found both wild and cultivated in the mountains of Guatemala, from altitudes of about 4,000 up to 9,000 feet or perhaps higher. As commonly seen, the tree is erect, often somewhat slender, reaching a height of about 30 feet, the trunk stout (occasionally as much as 3 feet thick), and the bark rough and grayish. The young branchlets are dotted with grayish lenticels. The leaves, which are borne upon slender petioles three-quarters of an inch long, are commonly $4\frac{1}{2}$ inches in length, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in breadth at the widest point, oblong-lanceolate in outline, with a long, slender tip. The upper surface is dull green, the lower surface glaucous, and the margin is rather finely serrate. The flowers, which are produced from January to May, are white, about three-eighths of an inch wide, and very numerous, on slender racemes 2 to 4 inches in length.

As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September. The ripe fruits, which are slightly oblate in form and up to three-quarters of an inch in diameter, separate readily from the short fruit stalks, leaving the green 5-toothed calyxes adhering to the latter. In color the fruit is deep glossy maroon-purple. The skin is thin and tender, but so firm that the fruit is not easily injured by handling. The flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison with the size of the fruit.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways—stewed or made into preserves or jams. In Guatemala it is most commonly eaten out of hand and as a sweet preserve.

"This species does not appear to be adapted to hot tropical seacoasts, but it seems to be distinctly subtropical in character. It may succeed in moist subtropical regions, such as Florida, where other types of cherries do not thrive."

44886 and 44887. MARTYNIA spp. Martyniaceæ.

From La Mortola, Ventimiglia, Italy. Presented by Mr. Joseph Benbow, superintendent, La Mortola gardens. Received June 13, 1917.

Introduced for the plant-breeding experiments of Prof. David M. Mottier, Bloomington, Ind.

44886. MARTYNIA LOUISIANA Mill.

Unicorn plant.

(*M. proboscidea* Glox.)

An ascending or prostrate annual, with branches 2 to 3 feet in length and large roundish leaves 4 to 12 inches wide. The dull white or yellowish flowers are $1\frac{1}{2}$ to 2 inches long, occurring in short, loose, terminal racemes, and the fruit is a more or less fleshy capsule 4 to 6 inches long at maturity, with a beak equaling or exceeding the body. It is a native of the United States, excepting in the North and East. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2005.*)

44887. MARTYNIA LUTEA Lindl.

A pale annual, with roundish, heart-shaped leaves and large greenish yellow flowers with orange interiors, occurring in erect, few-flowered racemes. The fruit is a woody, boat-shaped capsule with two beaks 2 inches in length. It is a native of Brazil and has been cultivated in European greenhouses for the sake of the showy flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2005.*)

44888. MELIA FLORIBUNDA Carr. Meliaceæ.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 13, 1917.

This species is considered by some to be a very floriferous and precocious form of the China tree (*Melia azedarach*), but the plant grown in the United States under this name is a bushy species 8 or 10 feet high, with pinnate leaves composed of lanceolate or oblong-lanceolate, taper-pointed leaflets. It is said to begin to bloom when 1 or 2 feet high and is an ornamental adapted to the southern United States. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 2025.*)

44889. CARICA PAPAYA L. Papayaceæ.

Papaya.

From Santa Barbara, Isle of Pines, West Indies. Presented by Mr. R. G. Rice. Received June 14, 1917.

"Very fine quality; the fruits weigh from 4 to $7\frac{3}{4}$ pounds each." (*Rice.*)

44890 and 44891.

From Bogota, Colombia. Presented by Mr. George E. Child. Received June 14, 1917.

44890. ACHRAS ZAPOTA L. Sapotaceæ.

Sapodilla.

(*A. zapota* L.)

A small, symmetrical tree, 25 to 30 feet high, with leathery, dark-green, shiny leaves and round or oblong fleshy fruits, resembling in outward appearance a smooth-skinned brown potato. It is a native of tropical Amer-

44890 and 44891—Continued.

ica, although cultivated in the Asiatic Tropics as well. When thoroughly ripe, the fruit is very fine for eating, a very thin skin inclosing a pale-brown, juicy pulp of delicious flavor. It is best propagated by cuttings, although it may be raised from seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 133.)

44891. CARYOPHYLLUS JAMBOS (L.) Stokes. Myrtaceæ. Rose-apple.
(*Eugenia jambos* L.)

A handsome medium-sized tree, native to India and the Malay Peninsula, but cultivated in many tropical countries for the edible, fragrant, pinkish fruits, which are about the size of a hen's egg, of a sweetish acid taste, and said to be sometimes used in preserves. It thrives best in moist regions at altitudes up to 3,000 feet, preferring a deep, rich soil, and is propagated by seed. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 161.)

44892. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.**Pai ts'ai.**

From Ann Arbor, Mich. Purchased from Mrs. Fred Osborn, manager, Varsity City Celery Co. Received June 15, 1917.

"*Lun Gar Bak*. Of the dozens of strains of Chinese cabbage, the short-leaved, solid-headed strain is the one that we have always used and found most profitable.

"As a field crop sow in rows 3 feet apart and thin to 18 inches in the row. Keep the plants well watered and cultivated, for as soon as growth is checked the seed head is formed and bursts forth as soon as moisture is again applied." (*Osborn.*)

44893. CAPSICUM sp. Solanaceæ.**Pepper.**

From Guatemala. Collected by Mr. Wilson Popenoe, agricultural explorer. Received June 18, 1917.

"(No. 136a. June 1, 1917.) A perennial bush pepper from Momostenango (altitude 7,500 feet), in the Department of Totonicapam. The plant makes a large bush 6 feet or more in height and produces throughout the year waxy, golden-yellow, broad peppers about 2 inches long, bluntly three pointed at the apex, with thick meat and a few seeds near the base of the fruit. The taste is rather sharp, so that it can not be classed as belonging to the sweet peppers. It is an unusually handsome pepper and seems to be of excellent quality. It should be tested in the warmer portions of the United States." (*Popenoe.*)

44894. TRICHOSCYPHA sp. Anacardiaceæ.

From Loanda, Angola, Africa. Presented by Mr. John Gossweiler, Servicos de Agricultura, Angola. Received June 18, 1917.

"(No. 6882. February 27, 1917.) A palm-shaped unbranched tree with agreeably acid fruits borne on the trunk." (*Gossweiler.*)

44895 to 44901.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received June 20, 1917.

44895. CYNOMETRA CAULIFLORA L. Cæsalpiniaceæ.

A medium-sized tree, with a very irregular, knotty trunk, covered with thick, brown bark, marked with numerous grayish and whitish spots.

44895 to 44901—Continued.

The alternate, compound leaves are smooth and light green when mature, but when young are red or pink or, in some varieties, yellow. From the trunk and branches appear the corymbs of small pink or white flowers. The flattened, roundish, light-brown pods have a fleshy portion which is very palatable when stewed. The tree is a native of Java. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 6, pl. 4.*)

44896. HYDNOCARPUS ALPINA Wight. Flacourtiaceæ.

Var. *elongata*. Apparently an unpublished varietal name.

The species may be described as follows: A large tree, 70 to 100 feet in height, with very variable leaves (red when young and deep green when old) up to 7 inches in length and $2\frac{1}{2}$ inches in width, and dioecious flowers in axillary racemes. The fruit is globose, about the size of an apple, with a brown, hairy surface. The seeds yield an oil which is used as fuel, and the wood is employed for general carpentry. It is a native of the Nilgiri Hills in southern India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 308*, and from *Hooker, Flora of British India, vol. 1, p. 197.*)

44897. LAGERSTROEMIA SPECIOSA (Muenchh.) Pers. Lythraceæ.

(*L. flos-reginae* Retz.)

Crape myrtle.

A large deciduous tree, with smooth grayish bark, elliptic or lanceolate leaves 4 to 8 inches in length, and large panicles of flowers. The individual flowers are 2 to 3 inches wide and change from pink to purple from morning to evening. It is a native of India and Burma, where it is considered one of the most important timber trees, the light-red wood being hard and shiny. The tree has been introduced into southern California as an ornamental. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 4, p. 1775*, and from *Gamble, Manual of Indian Timbers, p. 373.*)

44898. MUSSAENDA RUFINERVIA Miquel. Rubiaceæ.

A shrub with shiny, elliptic-oblong leaves 4 to 6 inches in length, reddish flowers about half an inch long in terminal corymbs, and oval-oblong fleshy berries. It is a native of Sumatra. (Adapted from *Miquel, Flora Indiae Batavae, vol. 2, p. 211.*)

44899. OTOPHORA ALATA Blume. Sapindaceæ.

Pisang tjina. A tall Javanese tree, with compound, glabrous, green leaves, and purplish flowers in pendulous axillary racemes, or sometimes solitary. The fruits are not much eaten, but hang in graceful clusters, remarkable for their beauty. The juice of the fruits is said to be useful in removing stains from linen. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 3, pl. 4.*)

44900. SARACA DECLINATA (Jack) Miquel. Cæsalpiniaceæ.

Kisokka. An ornamental tree, rarely more than 20 feet high, with alternate, pinnate leaves composed of six to eight pairs of oblong-lanceolate leaflets which are purplish brown when young. The bright-yellow, reddish tinged flowers occur in corymbs, sometimes on the trunk, and make a pleasing contrast with the crimson peduncles of the corymb. The oblong, flat pods are about a foot long and are a beautiful purplish crimson while immature. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 3, pl. 2.*)

44895 to 44901—Continued.

44901. STROPHANTHUS CAUDATUS (Burm.) Kurz. Apocynaceæ.
(*S. dichotomus* D. C.)

Kikoeija. A very ornamental, shrubby vine, with white-dotted, dark-brown bark, simple, opposite, smooth, oval-acuminate, green leaves, and large, showy, red and white flowers occurring either singly or in corymbs. The fruits are follicles sometimes 2 feet in length, and the seeds, which are provided with long, silky hairs, are very pretty. This vine is a native of the East Indies, where the women use the flowers to adorn their head-dresses. (Adapted from *Van Nooten, Fleurs et Fruits de Java, pt. 7, pl. 1.*)

44902 to 44905.

From Lawang, Java. Presented by Mr. M. Buysman. Received June 19, 1917.

44902. BRASSAIOPSIS SPECIOSA Dec. and Planch. Araliaceæ.

A small tree with the upper part of the branches, and sometimes the panicle, prickly. The glabrous, digitate leaves with lanceolate or elliptic leaflets are up to 8 inches in length and 3 inches in width, and the flowers occur in large panicles a foot or more in length. The tree is native to the eastern Himalayas from Nepal to Assam, from sea level up to 5,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 737.*)

44903. LONICERA MACRANTHA (D. Don) Spreng. Caprifoliaceæ.

Honeysuckle.

A rather common Himalayan shrub with leathery, cordate-oblong, hairy leaves an inch wide and 2½ inches long, and white, paired flowers, fading to yellow, appearing in subterminal panicles. It grows at altitudes of 6,000 to 10,000 feet or occasionally lower. (Adapted from *Hooker, Flora of British India, vol. 3, p. 10.*)

44904. RIBES GRIFFITHII Hook. f. and Thoms. Grossulariaceæ.

An erect shrub about 8 feet high, with sharply serrate, 5-lobed leaves 2 to 3 inches long, and very lax, pendent racemes 3 to 6 inches long. The red, glabrous berries are about a quarter of an inch in length. The shrub is a native of the eastern Himalayas at altitudes ranging from 7,500 to 13,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 411.*)

44905. RUBUS LINEATUS Reinw. Rosaceæ.

See S. P. I. No. 44845 for description and previous introduction.

44906. TRIFOLIUM PRATENSE L. Fabaceæ.

Red clover.

From Petrograd, Russia. Presented by Mr. I. A. Pullman, through Dr. Robert Regel, Bureau of Applied Botany. Received June 21, 1917.

"(March 25, 1917.) Late, tufted Second generation; Mr. I. A. Pullman, selector. Crop of 1916. From 2.7 acres were harvested 10,000 pounds of hay and 600 pounds of seeds." (*Pullman.*)

Introduced for the Office of Forage-Crop Investigations.

44907. BONTIA DAPHNOIDES L. Myoporaceæ.

From Curaçao, Dutch West Indies. Presented by Mr. H. M. Curran. Received June 22, 1917.

"A small, glossy leaved, ornamental tree, suitable for planting in dry situations near the sea in southern California and Texas." (*Curran.*)

A small tree with a habit so similar to that of the olive that it has been put into the olive family by botanists who did not recognize its true nature. It has alternate lanceolate leaves and axillary flowers which are either solitary or in pairs. The fruits are fleshy drupes, each containing eight hard seeds. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 156.*)

44908. ARTOCARPUS COMMUNIS Forst. Moraceæ. Breadfruit.
(*A. incisa* L. f.)

From Honolulu, Hawaii. Plant presented by Mr. Gerrit P. Wilder. Received June 25, 1917.

"*Ulu*. (Hawaiian variety.)" This variety, which now grows wild throughout the Hawaiian Islands, was originally introduced from Tahiti. It has large, rough, ovate, deeply lobed leaves, and the staminate flowers appear in large yellow catkins. The large-stemmed fruit is either round or oblong and varies from 5 to 8 inches in diameter. The thick tough rind, which is brownish at maturity, incloses a firm, very starchy, and somewhat fibrous pulp, which becomes mealy when cooked, slightly resembling a dry sweet potato, and is much esteemed as an article of diet. The tree is propagated by suckers or by layering. (Adapted from *Wilder, Fruits of the Hawaiian Islands, p. 100, pl. 48.*)

44909. CASUARINA STRICTA Ait. Casuarinaceæ.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison, through Mr. C. V. Piper. Received June 28, 1917.

An Australian tree, 20 to 30 feet in height, known in New South Wales as *Feld's fodder tree*, suitable for dry or semiarid sections. The foliage is eagerly eaten by cattle, especially in times of drought, and it is said that one tree has supported 8 to 10 head of stock at one time. Even in large quantities it does not appear to have an injurious effect on the cattle. The wood is used for cabinetwork and shingles and makes an excellent fuel. (*Harrison.*)

44910. CASSIA TOMENTOSA L. f. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture. Received June 28, 1917.

A shrub, 10 to 12 feet high, with compound leaves composed of six to eight pairs of oval-oblong, obtuse leaflets with white-velvety lower surfaces. The flowers are deep yellow. It is a native of tropical America and is said to be a good winter bloomer in southern California. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 2, p. 680.*)

44911. ATTALEA sp. Phœnicaceæ. Palm.

From Venezuela. Presented by Mr. H. M. Curran. Received June 26, 1917.

"(No. 1027. From Colon, Estado Tachira, south of Lake Maracaibo, Venezuela, June 6, 1917.) *Coruba*, a common palm." (*Curran.*)

44912 and 44913. CYPHOMANDRA BETACEA (Cav.) Sendt. Solanaceæ. Tree-tomato.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received June 25, 1917.

"The fruit is delicious; it is eaten in the raw state or as preserves." (*Goding.*)

For a general description, see S. P. I. No. 44846.

44912. "Yellow tree-tomato. December 4, 1916."

44913. "White tree-tomato. December 6, 1916."

44914 to 44921.

From Zacuapam, Vera Cruz, Mexico. Secured from Dr. C. A. Purpus. Received June 25, 1917.

44914. ACACIA SPADICIGERA Cham. and Schlecht. Mimosaceæ.

Bull-horn acacia.

"An interesting shrub or small tree, with spreading branches armed with thorns resembling the horns of a bull and consequently called, together with its allies, *bull-horn acacia*. The thorns attracted the attention of early botanists from the fact that they are usually hollowed out and inhabited by stinging ants which serve as bodyguards, protecting the plant from herbivorous animals. The present species is very closely allied to *Acacia cornigera* of Linnæus, if not identical with that species. The hollow, indehiscent pods, terminating in sharp spines, inclose a number of hard seeds surrounded by a sugary aril which is much relished by cattle and other animals." (*W. E. Safford.*)

44915. AMARANTHUS sp. Amaranthaceæ.

Amaranth.

Quelite. "This is used as a vegetable, tasting like spinach. It grows about the houses and fields and does not need any care." (*Purpus.*)

44916. CACARA EROSA (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)

For previous introduction and description, see S. P. I. No. 44839.

44917 and 44918. EXOGONIUM PURGA (Wender.) Benth. Convolvulaceæ.

(*Ipomoea purga* Hayne.)

Jalap.

A perennial twining vine which bears handsome rose-purple flowers similar to those of the common morning-glory. It is a native of the eastern slopes of the mountains of western Mexico, at altitudes of 5,000 to 8,000 feet, in regions where rain is very frequent and abundant. It is cultivated in Mexico and also in other tropical places for the sake of the drug which is extracted from the dried tubers. In cultivation the plant requires a rich forest loam, and must be supported by trellises. (Adapted from the *National Standard Dispensatory*, p. 834.)

44917. "Wild form." (*Purpus.*)

44918. "Cultivated form, from the sierras around Mount Orizaba." (*Purpus.*)

44919. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.

Tomato.

"Var. *cerasiforme*. Growing wild in bean fields." (*Purpus.*)

A variety which is smaller and more erect than the common tomato and has smaller, more numerous, and grayer leaves. The globular red

44914 to 44921—Continued.

and yellow fruits are used for pickles and conserves. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 4, p. 1931.*)

44920. PSIDIUM sp. Myrtaceæ.

"A wild guava which tastes like a strawberry." (*Purpus.*)

44921. VITIS sp. Vitaceæ.

"*Callulos.*" "Several species of *Vitis* are found in the Mexican lowlands. The commonest of these is *Vitis tiliaefolia*. Another belongs apparently to the Muscadine group and produces fruits much like those of the James, although usually smaller. These tropical grapes should be brought together in some suitable region, such as extreme southern Florida, and there developed by a competent plant breeder. We do not have as yet a first-class table grape suited to strictly tropical regions. With the excellent material available for breeding, it should be comparatively simple to produce one." (*Popenoe.*)

44922 to 44924. ACACIA spp. Mimosaceæ.

From the vicinity of Khartum, Sudan, Africa. Presented by Mr. F. G. Walsingham, Gizeh Branch, Ministry of Agriculture, Cairo, Egypt. Received June 28, 1917.

44922. ACACIA ALBIDA Delile.

A large, much-branched tree, with whitish bark and stipular spines usually from one-half to three-quarters of an inch in length. The compound leaves are composed of four to six pairs of pinnæ, and the white flowers occur in axillary spikes up to 5 inches long. The flat, oblong pods are 2 to 4 inches long. The tree is a native of tropical and northern Africa and yields a gum similar to gum arabic. The leaves are eaten by goats, and the bark is used in curing leather. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 339*, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 2, p. 288.*)

44923. ACACIA SEYAL Delile.

A small or medium-sized tree with brown or reddish brown bark, slender, recurved, ivory-white spines 1 to 2 inches long, and bipinnate leaves with three to nine pairs of pinnæ. The very fragrant flowers are in heads, and the leathery, sickle-shaped pods are from 3 to 6 inches long. The tree is common in tropical Africa north of the Equator and is one of the principal gum-yielding acacias in the Nile region. This gum, which flows freely from all wounds, is of a bright amber color, becoming white and brittle when thoroughly dry. It has a relatively high viscosity and strong adhesive power. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 351*, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX, pt. 2, p. 295.*)

44924. ACACIA VERUGERA Schweinf.

A tall tree, up to 60 feet in height, with gray or greenish gray bark, and long, slender, straight, spreading spines. The bipinnate leaves are composed of seven to eight pairs of pinnæ, and the heads of flowers are in axillary fascicles of four to eight. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 354.*)

44925 to 44934. TRITICUM spp. Poaceæ.

From Paris, France. Presented by Messrs. Vilmorin-Andrieux & Co. Received June 30, 1917.

The following varieties were sent in response to a request for rust-resistant wheats.

44925 to 44932. TRITICUM AESTIVUM L. Wheat.
(*T. vulgare* Vill.)

44925. "Altkirch Red Winter."

44926. "Autumn Saumur; Gray St. Laud."

44927. "Broad-Headed Winter, hybrid."

44928. "Dreadnought or Steadfast; Early Hybrid. Suitable for autumn or early February sowing; good yielder; short straw."

44929. "Lamed hybrid; reddish yellow grain."

44930. "Red St. Laud."

44931. "Scotch Red, Blood Red, or Golden Drop."

44932. "Treverson."

44933. TRITICUM SPELTA L. Spelt.
"White beardless spelt."

44934. TRITICUM TURGIDUM L. Poulard wheat.
"Nonette de Lausanne."

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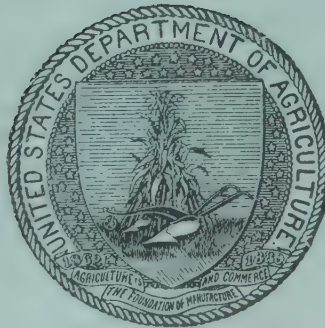
WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1917.

(No. 52; Nos. 44935 to 45220.)



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BUREAU OF PLANT INDUSTRY.

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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge.*

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Gardens.*
B. T. Galloway, *Plant Pathologist, Special Research Projects.*
Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service.*
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E. L. Crandall, *Assistant in Charge of Photographic Laboratory.*
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Henry E. Juenemann, *Superintendent, Plant Introduction Garden, Bellingham, Wash.*
Wilbur A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*
E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*
Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartless, *Scharunpur, India*; E. W. D. Holway, *Faribault, Minn.*; Barbour Lathrop, *Chicago, Ill.*; Dr. H. L. Lyon, *Honolulu, Hawaii*; Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Little River, Fla.*; Dr. L. Trabut, *Director, Service Botanique, Algiers, Algeria*; Dr. William Trelease, *Urbana, Ill.*; E. H. Wilson, *Arnold Arboretum, Jamaica Plain, Mass.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE
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1917 (NO. 52; NOS. 44935 TO 45220).

INTRODUCTORY STATEMENT.

This small inventory covers a period of the World War during which every energy which could be utilized was directed to the most active war work and the shipping of seeds and plants was nearest at a standstill.

A few of the introductions, however, merit mention in this introductory statement.

The success of such introduced forage grasses as Rhodes grass and Sudan grass in the South and Southwest makes the introduction of four forage grasses from New South Wales (Nos. 45037 to 45040) and a promising collection from the Belgian Kongo (Nos. 45204 to 45214) of particular interest to those who are pioneering in the livestock industry in these warm regions.

Mr. Wilson Popenoe sent in from Guatemala seeds of an undescribed species of *Persea* (No. 44996), which, although having leaves very much like those of the avocado, has fruits with a fleshy, persistent calyx. The hybridizing which is going on between different races of *Persea americana* may make this species of value for hybridization purposes. Mr. Popenoe's large-fruited form of the coyó (No. 45081), which weighed 2 pounds and was of good quality, deserves to be called to the attention of tropical horticulturists and a comparison made on a considerable scale between it and the West Indian forms of avocado.

Just how different specifically the *Carica dodecaphylla* (No. 45141) of Argentina is from the ordinary *C. papaya* remains to be seen when they are grown side by side in Florida, but as already crosses between *C. candamarcensis* and *C. papaya* are being attempted it is important to bring into the hands of the plant breeders all the species and varieties obtainable.

Those interested in tropical species of *Rubus* may find in *Rubus racemosus* (No. 45044) from the Nilgiri Hills of India a useful form. The delicious rambutan of Java (*Nephelium lappaceum*) and the litchi of South China appear to have a rival in *N. bassacense* (No. 45131) from Cochin China, a species whose fruits have longer spines even than the beautiful rambutan.

The success of the Chinese grafted jujube in this country will make many experimenters interested in *Ziziphus mauritiana* (No. 44940), a tropical species the fruit of which is used, both fresh and dried, in India and of which the best variety comes from Kandahar.

Flavoring plants are not used as much in America as in France and Italy, except where Creole cooking still lingers. A tropical vine (No. 45220) with flowers and flower buds which impart a flavor of oysters to milk or potato soup may, however, interest those who live where the vine can be grown. One of the most conspicuous ingredients of the Japanese "rice tafel," or curry, of Java, is the pickled fruits of *Gnetum gnemon* (No. 45152), a shrub or small tree which furnishes not only singular potatolike fruits but edible leaves, which are stewed and eaten like spinach.

The Chinese pai ts'ai has met with such success in America and is now marketed by so many truck growers that a considerable number of people will be interested in a collection of varieties (Nos. 45185 to 45189) secured by Mr. Frank N. Meyer, which includes sorts which may be planted in April or May, others in August, and still others as late as September.

Ideal house palms are hard to find, and the pacayito of Guatemala (No. 44994) would seem to approach this ideal in that it has a graceful form while quite young, is suitable for the so-called fern dishes which adorn the center of the table, and because it fruits when not over a foot high, maturing its small, round, interesting seeds in the winter season.

The behavior on high pine land at Gotha, Fla., of the hardy palm, *Butia capitata* (No. 45009), a close relative of the genus *Cocos*, makes it seem worth while to distribute more widely over these pine lands this interesting species from Argentina, which bears showy, edible fruits.

Those who know Dr. Pittier well will be interested in his account of his experience with the fruit of an undescribed species of *Calycophyllum* (No. 45219), which resembles a wild passion fruit but is intense orange-yellow in color and outdoes the red pepper in flavor. It occurs in the forests near Caracas, Venezuela.

The brilliant blue-flowered *Salvia patens* has made everyone who saw it long for a more robust form. It is possible that in *S. hemphsteadiana* (No. 44995) Mr. Popenoe has found one which can be grown more satisfactorily as an annual in this country.

To any who have watched the growth of hybrid walnut trees and who believe, as Dr. Sargent does, in the future of hybrid trees for timber production, the introduction of a tropical black walnut from Porto Rico (No. 45033) can hardly fail to be of interest, particularly when the scarcity of black-walnut timber is considered. Whether it

will be feasible to plant a whole mountain slope in the Adirondacks with one of Japan's largest and loveliest flowering cherry trees for the production of cherry wood remains to be seen. *Prunus serrulata sachalinensis* (Nos. 45074 and 45178), which forms a forest tree 60 feet tall and several feet in diameter, is probably the best timber-producing species of the true cherries. In 1906 the writer introduced for his private place in Maryland a collection of Japanese cherry trees, buying them from the Yokohama Nursery Co., of Japan. Out of 23 varieties several have shown themselves particularly well adapted to the soil and climate of the region, and although the Japanese names which accompanied them are some of them not listed in the Arakawa collection it is deemed desirable to make a distribution of budded trees from these trees which have proved themselves so well suited to the conditions on the Atlantic seaboard (Nos. 45049 to 45062).

An unusual interest attaches to two species of Rubiaceæ, *Pavetta indica* (No. 45153) and *Psychotria bacteriophila* (No. 45155) from Java, because of the fact that their leaves have embedded in them nodules, like the nodules on the roots of leguminous plants, which furnish to the plants nitrogen gathered from the air. The question of whether or not these shrubs will be of service in Florida in the enrichment of the soil must be answered by actual tests.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript of the inventory has been prepared by Mrs. Ethel M. Kelley.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., January 31, 1921.

INVENTORY.¹

44935. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

From Los Angeles, Calif. Purchased from Aggeler & Musser Co. Received July 6, 1917.

"A cabbage with short cylindrical solid heads. It is not suitable for spring planting, for when sown early it runs to seed without heading. It should be sown in seed beds late in July and transplanted to rich, moist earth, spacing 15 inches, in rows 2 to 3 feet apart. It should be harvested after the first light frost; the roots should be left on and the outer leaves removed. It may be stored in layers under dry straw with a heavy covering of soil. By cutting off all green leaf tips it can be cooked without the penetrating cabbage odor." (Peter Bisset.)

For previous introduction and further description, see S. P. I. No. 40604.

44936 and 44937. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

From China. Nuts purchased from Mr. E. K. Lowry, manager, American Machinery & Export Co., Tientsin. Received July 2, 1917.

44936. "Sample No. 524. Soft shell, 1916 crop; grown in the district of Changli, northern China." (Lowry.)

44937. "Sample No. 525. Hard shell; grown in the Western Hills, west of Peking." (Lowry.)

44938. *CANAVALI ENSIFORME* (L.) DC. Fabaceæ. Jack bean.

From Mombasa, British East Africa. Presented by Kerslake Thomas & Co., Gotani estate, Chagamwe, at the request of Mr. Henry P. Starrett, American consul, Mombasa. Received July 2, 1917. Quoted notes by Kerslake Thomas & Co.

"Go-ta-ni bean. It is an exceedingly heavy cropper, yielding about 2,200 pounds per acre under ordinary conditions. It is very hardy and a great drought resister. In this country it is a perennial, 2½ feet in height, and grows well on a clay loam and also on a light sandy soil. It would probably do well in the southern United States and California. Upon analysis it is found that the bean contains an exceptionally high percentage of albuminoids and oil, while the moisture is low. The high percentage of fiber is accounted

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction, and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names in American literature becomes necessary, the foreign varietal designations appearing there will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

for by the tough consistency of the outer covering of the bean. There is nothing to indicate that it would not be fit for food, although the tough outer covering would better be removed. No prussic acid has been detected in the macerated product."

Received as a hybrid between the so-called Madagascar butter bean (*Phaseolus lunatus*) and the sword bean (*Canavali gladiatum*).

44939. VICIA FABA L. Fabaceæ. Broad bean.

From Camden, N. J. Presented by Mr. A. T. Ivanhoe. Received July 2, 1917.

"In Russian called *Konskie Bobi* (horse bean), or plain *Bob*. Plant at the same time as peas in good garden soil which is not too dry." (*Ivanhoe*.)

44940. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. Bor.
(*Z. jujuba* Lam., not Mill.)

From Seharunpur, India. Seeds presented by Mr. A. C. Hartless, superintendent, Botanic Garden. Received July 2, 1917.

"The tree is mainly cultivated for its fruit, which on the wild or commoner kinds is more or less globose, and on the cultivated and improved kinds ovoid or oblong. The pulp is mealy, sweetish, with a pleasant taste, and some of the cultivated kinds are very good indeed. The dried fruits are sold in the bazaars of the Panjab under the name of *unab*; the best kind is imported from Kandahar." (*D. Brandis, Forest Flora of India*, p. 88.)

44941 and 44942. CARICA PAPAYA L. Papayaceæ. Papaya.

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, Agricultural Experiment Station. Received July 5, 1917.

These papaya varieties were introduced for comparative studies in papain content and fruit production.

44941. "No. 2594."

44942. "No. 3598-12."

44943 to 44953. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received July 6, 1917.

The following varieties were sent in response to a request for rust-resistant wheats. (Quoted notes by Vilmorin-Andrieux & Co.)

44943. "*Alliés Hybrid*."

44949. "*Japhet, or Red Marvel; yellow grain*."

44944. "*Autumn Victoria*."

44945. "*Bearded Pearl of Nuisement*."

44950. "*Jolly Farmer's Hybrid, or Sensation*."

44946. "*Crépi*."

44951. "*Massy Hybrid*."

44947. "*Dattel Hybrid, or White Marvel*."

44952. "*Red-Bearded Autumn*."

44953. "*Treasure Hybrid*."

44948. "*Early Noé, or Blue*."

44954. BIXA ORELLANA L. Bixaceæ. Annatto tree.

From Sao Paulo, Brazil. Presented by the Empresa Editora de Chacarase Quintaes. Received July 6, 1917.

"*Urucú*." A large-leaved tropical tree, about 30 feet high, with panicles of showy pinkish flowers. It is cultivated in the East and West Indies for the

annatto dye prepared from the orange-red pulp which surrounds the seeds. This dyé is the coloring matter chiefly used in butter and cheese. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 510.*)

44955 and 44956.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale Nursery. Received July 6, 1917.

44955. *IXERBA BREXIOIDES* A. Cunn. Escalloniaceæ.

"*Tawari.*" A beautiful evergreen tree, sometimes 70 feet tall, with thick, leathery, coarsely serrate leaves 3 to 7 inches long and very handsome waxy, white flowers $1\frac{1}{2}$ inches wide, occurring in flat panicles. It is a native of New Zealand, where it is not common, and is considered by some to be the most beautiful tree indigenous to that country. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 186.*)

44956. *RYMANDRA EXCELSA* Salisb. Proteaceæ.

(*Knightia excelsa* R. Br.)

A New Zealand tree, sometimes 100 feet in height, with stiff, linear-oblong, roughly toothed leaves 4 to 8 inches long and racemes of red, velvety flowers 2 to 3 inches long and 2 inches in diameter. The tree bears a considerable resemblance to the Lombardy poplar when seen from a distance. The wood is much used for cabinetwork. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 146.*)

44957 to 44961.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received July 7, 1917.

44957. *ALBIZZIA LOPHANTHA* (Willd.) Benth. Mimosaceæ.

(*Acacia lophantha* Willd.)

"*Cape or crested wattle.* Collected near Hursts Bridge, Victoria. Before planting soak in boiling water and allow to cool." (*Baker.*)

A shrub or small tree 6 to 20 feet high, with graceful, feathery foliage and yellowish summer-blooming flowers in spikes about 2 inches in length. The flat, oblong pods are thickened at the edges. The shrub is a native of Western Australia, often cultivated as a greenhouse shrub in temperate regions, and is now naturalized in southern California. (Adapted from *Botanical Register, vol. 5, pl. 361*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 243.*)

44958. *BRACHYCHITON ACERIFOLIUM* F. Muell. Sterculiaceæ.

(*Sterculia acerifolia* A. Cunn.)

An Australian tree, up to 35 feet in height, with very dark-green, shining, maplelike leaves 6 to 10 inches wide and scarlet bell-shaped flowers which hang from the tree in large clusters. It is sometimes called the *Australian flame tree*, because of the fact that when it comes into bloom upon shedding its leaves in midsummer the tree appears like a huge flame. In the Pacific States it is considered a very fine avenue tree. (Adapted from *The Pacific Garden, November, 1913.*)

44959. *EUCALYPTUS CALOPHYLLA* Lindl. Myrtaceæ.

Variety *rosea*. A medium-sized Australian tree with dense foliage and dark, corky, deeply furrowed bark. The thick, firm leaves are ovate-lanceolate, and the large pink flowers appear in large clusters. It is an ornamental tree of slow growth, not enduring frost or drought, and

44957 to 44961—Continued.

is used as a shade tree in California. The wood is tough and used for building, but is not durable under ground. The bark is rich in kino, and the fall bloom is valuable for bees. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1152.*)

44960. EUGENIA VENTENATII Benth. Myrtaceæ.

An Australian tree 40 to 60 feet high and 2 to 3 feet in diameter, with oblong-lanceolate leaves 3 to 5 inches long and flowers in compound panicles. The fruit is a roundish 1-seeded drupe about half an inch in diameter. The wood is of a gray or pinkish hue and beautifully marked. It is close grained, hard, heavy, and tough and is used for tool handles, flooring, etc. (Adapted from *Maiden, Useful Native Plants of Australia, p. 532, and from Bailey, Queensland Flora, part 2, p. 658.*)

**44961. PANDOREA AUSTRALIS (R. Br.) Spach. Bignoniaceæ.
(*Tecoma australis* R. Br.)**

A beautiful climbing vine with abundant, dark-green foliage of handsome appearance and loose terminal panicles of yellowish flowers. It is a native of New South Wales, where it is called the *wonga-wonga* vine, and is cultivated in the southern United States. It requires a rich soil and must be watered freely during the dry spring months. If frozen it readily sprouts from the vigorous rootstock. (Adapted from *W. C. Steele, in the Florida Agriculturist, Oct. 23, 1901.*)

44962. PISTACIA CHINENSIS Bunge. Anacardiaceæ.**Chinese pistache.**

From Chefoo, China. Seeds obtained through Mr. Lester Maynard, American consul. Received July 10, 1917.

A beautiful Chinese tree with graceful pinnate leaves which are at first dark red, then glossy green, and finally, in autumn, become scarlet, purple, and yellow. Trees of previous introductions have done so well in many parts of our country that we can now recommend this beautiful tree for park and avenue planting. Where the winters are not too severe it has withstood temperatures of 4° F. without injury, as at Washington, D. C. When planted in a well-drained situation it is especially valuable for the Southern and Pacific Coast States and should become a welcome addition to the list of cultivated trees because of the beautiful autumnal coloration of its foliage. Individual specimens sometimes live to be centuries old and attain great size. The tree may prove a good stock for *Pistacia vera* L., the edible pistache nut.

44963 and 44964. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, director, Agricultural Experiment Station. Received July 10, 1917.

44963. *Santa Cruz 12/37.*

44964. *Santa Cruz 13/32.*

44965 to 44993.

From Argentina. Presented by Mr. W. Henry Robertson, American consul general, Buenos Aires. Received July 3, 1917. Quoted notes by Dr. D. N. Shoemaker.

These seeds are a collection obtained by the Argentine Department of Agriculture from various parts of Argentina.

44965 to 44993—Continued.

- 44965 to 44967. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
44965. (No. 2. Estación Experimental, La Banda, Santiago del Estero.) *Manteca*. "A form of *White Sieva Lima*."
44966. (No. 3. Estación Experimental, Tigre.) *Manteca*. "A form of *White Sieva Lima*."
44967. (No. 17.) *Small Sieva Manteca*. "The *Small Sieva Lima*."
44968. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.
- (No. 5.) *Colorado de España*. "Identified as the ordinary *Scarlet Runner*."
- 44969 to 44980. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
44969. (No. 1. Estación Experimental, La Banda, Santiago del Estero.) *Blanco criollo*. "Similar to *California Small White* bean."
44970. (No. 4.) *Blanco de manteca pequeño*. "Similar to *Medium* beans of New York State."
44971. (No. 6.) *100 X 1* (dwarf). "A bright-brown small bean not like any well-known variety in the United States."
44972. (No. 8.) *Dutch Case Knife*. "The variety as grown in the United States."
44973. (No. 9.) *Bicolor*. "A large bean with white ground color over half of the bean on the dorsal side; remainder of the bean brown and purple mottled. Not like any variety commonly grown in the United States."
44974. (No. 10.) *Bicolor*. "Identical with No. 9."
44975. (No. 11.) *Thorburn Large*. "Similar to *Giant Stringless Green Pod*."
44976. (No. 12.) *Hardlong French*. "A small white bean the size of *California Small White*."
44977. (No. 13.) *Hudson Wax* (dwarf). "This is not *Hudson Wax*; the seeds are black. It may be *Wax Podded*."
44978. (No. 14.) *Negro de Belgica* (dwarf). "This variety has small black beans."
44979. (No. 15.) *Blanco de manteca pequeño*. "White beans, about the size of *Medium* beans of New York State."
44980. (No. 18.) *Southern Prolific*. "True to name as grown in the United States."
- 44981 to 44991. *PISUM SATIVUM* L. Fabaceæ. Garden pea.
44981. (No. 19.) *Ojo negro*. "A large smooth pea with a black hilum."
44982. (No. 20.) *Maravilla del mercado*. "A slightly wrinkled white pea."
44983. (No. 21. Estación Experimental, La Banda, Santiago del Estero.) *Automovil*. "A large wrinkled pea."
44984. (No. 22. Estación Experimental, La Banda, Santiago del Estero.) *Orgullo del mercado*. "A small wrinkled pea."
44985. (No. 23. Estación Experimental, La Banda, Santiago del Estero.) *William Hurst* (dwarf). "A small wrinkled pea."

44965 to 44993—Continued.

44986. (No. 24. Estación Experimental, La Banda, Santiago del Estero.) *De 40 días*. "A greenish medium-sized semiwrinkled pea."
44987. (No. 25. Estación Experimental, La Banda, Santiago del Estero.) *Senador* (dwarf). "A medium-sized wrinkled pea."
44988. (No. 26. Estación Experimental, La Banda, Santiago del Estero.) *Cien por uno*. "A medium-sized wrinkled pea."
44989. (No. 27. Estación Experimental, La Banda, Santiago del Estero.) *Telegrafo*. "A rather small wrinkled pea."
44990. (No. 28. Estación Experimental, La Banda, Santiago del Estero.) *Gladiator* (dwarf). "A large wrinkled pea."
44991. (No. 29. Estación Experimental, Tigre.) *Comun*. "A small, smooth, green pea."
- 44992 and 44993. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
44992. (No. 7.) *Careta*. "Identified as a black-eyed cowpea."
44993. (No. 16.) *Southern Creaseback*. "Identified as a cowpea."

44994 to 44999.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received July 19, 1917. Quoted notes by Mr. Popenoe.

44994. *CHAMAEDOREA* sp. Phoenicaceæ.

Pacayito palm.

"(No. 150. July 9, 1917.) Plants of a dwarf palm collected in dense forests near Purula, Department of Baja Vera Paz, at an altitude of approximately 5,500 feet.

"This species is usually called by Spanish-speaking Guatemalans *pacayito*, which means 'small pacaya.' By the Indians of Alta Vera Paz, who speak the Kekchi language, it is called *ko-kiip*, which also means 'small pacaya,' and in Purula I heard it called *pamak*. This name is doubtless given because of the resemblance to the common *pacaya*, a palm which is extensively cultivated in Guatemala for its edible flower buds. Probably the name *pacayito* may be chosen as best suited to use in the United States.

"Judging from accounts given me by various residents of Vera Paz, this palm commonly occurs in the mountains of that region at altitudes of about 4,000 to 6,000 feet. It always grows in dense forests and must be considered a shade and moisture loving species. The soil in which it grows is nothing but decayed leaves for the first several inches and is kept continually moist by the abundant rains of this region. In Coban the *pacayito* is a favorite house plant, being grown in pots and tubs and used to decorate living rooms and patios. In the city of Guatemala it is occasionally used for the same purpose, the plants being brought down from Coban.

"In the forests the *pacayito* seems never to reach a greater height than 3 feet. It is a true dwarf (one might almost call it a miniature palm), for it reaches maturity and comes into flower when not over a foot high. This dwarf habit makes it of unusual interest as a pot plant for the North, as it can be fruited in an ordinary living room when growing in an 8-inch pot.

"It makes its character leaves almost as soon as the young plant is out of the seed. I have seen many plants in the forest which were not

44994 to 44999—Continued.

over 4 inches high and already had two to four fully characterized leaves. When quite small it strongly resembles *Cocos weddelliana*, but the pinnæ are somewhat broader and not so numerous. For fern dishes in the Northern States it should have great value.

"When mature, the plant has a slender trunk, perhaps half an inch thick and 2 feet high. The leaves are a foot to 18 inches in length, rather finely pinnate, deep green, graceful, with the rachis stiff but arching slightly. In Vera Paz the flowers are produced in June and July, and the small, round seeds, about as large as small peas, ripen in December.

"Since it is found at considerable elevations in Vera Paz, it seems likely that this palm will be sufficiently hardy for cultivation in the open in California and Florida. It should be provided with ample shade, however, and planted in a very moist situation in soil containing a large proportion of leaf mold.

"As a house plant for the Northern States and for use in fern dishes it seems to me that this plant possesses unusual possibilities, and I strongly recommend it for trial."

For an illustration of the pacayito palm, see Plate I.

44995. SALVIA HEMPSTEADIANA Blake. Menthaceæ.

"(No. 151. July 9, 1917.) Plants of an herbaceous perennial collected on the banks of a small stream at Purula, Department of Baja Vera Paz (altitude 5,200 feet).

"The plants commonly grow 1½ to 2 feet in height, and soon after the beginning of the rainy season (May) send up spikes of brilliant blue flowers, tubular in form and about an inch long. It is a conspicuous thing when in bloom, and is strongly recommended for trial in California and Florida, where it should be hardy."

44996. PERSEA sp. Lauraceæ.

"(No. 152a. Seeds from the Chuacus Mountains, near Rincon Grande, about 5 miles from Salama, at an approximate altitude of 3,000 feet. July 9, 1917.)

"I do not know what this species may be; possibly it is as yet undescribed. Only one tree has been seen up to the present, and this was erect, rather slender in habit, and 30 feet in height. The foliage strongly resembles that of *Persea americana*, but is more heavily pubescent beneath than is common in that species. In form and size the leaves could not be distinguished from some of the cultivated avocados. The young leaves and branchlets are covered with a velvety tomentum.

"The fruits, which ripen in June, are oval or oblong-oval in outline, about 1½ inches in length, shining black in color, with a membranous skin and a very small amount of greenish pulp having a strongly resinous taste. The seed is quite large in comparison with the size of the fruit, elliptical in outline, with the seed coats thin, brownish, and brittle, and adhering closely. The cotyledons are whitish, with the embryo at the base of the seed. The fruit is distinct from that of the avocado in having a large, fleshy, bluntly toothed calyx, pinkish or whitish in color, which remains on the tree when the fruit falls.

"This species is introduced in connection with the experiments now being carried on with a view to determining the best stock on which to bud the avocado."

44997. DIPHYSA sp. Fabaceæ.

"(No. 153a. July 9, 1917.) Seeds of a leguminous shrub common in the mountains of the northern part of the Department of Baja Vera Paz,

44994 to 44999—Continued.

between Salama and Santo Tomas. It grows in dry, rocky places and also along the banks of streams, reaching a height of about 3 feet under the former conditions and 6 feet under the latter. The foliage is coarsely pinnate, with oval, glaucous leaflets. The flowers, which are produced in clusters of considerable size, are of a deep lilac and quite attractive. In form they resemble the flowers of the common pea, but are smaller, being about half an inch broad. The shrub seems well worthy of trial in California and Florida."

44998. *TABEBUIA PENTAPHYLLA* (L.) Hemsl. Bignoniaceæ.

"(No. 154a. July 9, 1917.) *Matiliscuate*. Seeds of a handsome flowering tree found in north-central Guatemala, especially in the Valley of Salama, and commonly growing near small streams. I have seen it at altitudes of 2,000 to 3,500 feet. The tree is about 35 feet high at maturity, with a spreading crown, deciduous during the latter part of the dry season (January to March), and producing large clusters of pink flowers which make the tree a mass of color visible for some distance. Its flowering season is from January to March, and the seeds, which are produced in long, slender pods, ripen in May and June.

"As an ornamental tree for cultivation in southern Florida and possibly also in California the *matiliscuate* seems well worthy of trial. Its only defect is its habit of dropping its leaves during the dry months of the year. If it flowers in the same months in Florida as it does in Guatemala, however, it should be a valuable addition to the flowering trees of that region. It thrives on heavy but rocky land and does not seem to require a large amount of water."

44999. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 161. Bud wood from the sitio of Don David Pierri, San Cristobal, Vera Paz, July 3, 1917.)

"The *coyó*, *chucte*, *shucte*, or, as it is sometimes called, *chaucte*, is a species of *Persea* which is undoubtedly indigenous in this region. It is reported also from Zacapa and Chiquimula, but I have seen it only here up to the present. The tree grows on the banks of streams, where the soil is moist and rich. The hills in this region are dry, rocky, and covered with a scanty vegetation of cacti, *Pereskia*, thorny leguminous shrubs and small trees, and a few other plants. As well as being indigenous in this region, the *chucte* must be classed as a cultivated fruit tree, since it is occasionally, but not often, planted in gardens.

"At the present time the *chucte* is neither in flower nor in fruit. It is said to bloom in February and to ripen its fruit in May and June, continuing until August. One of the two trees which I have seen (this one standing on the north bank of the Rio Motagua a short distance above El Rancho) was about 60 feet in height. The other one was not more than 45 feet high. The general appearance of the tree, its habit of growth, size, and character of bark and foliage are remarkably suggestive of an avocado of the West Indian type, but on closer examination it is seen that the leaves are larger than is common with the avocado, the venation is impressed on the upper surface of the leaf, and, most conspicuous of all, the ends of the young branchlets and the petioles are covered with a ferruginous tomentum. The foliage is said to fall just before the tree comes into bloom, the flowers making their appearance along with the new leaves.



THE PACAYITO, A NEW ORNAMENTAL PALM FROM GUATEMALA.
(CHAMAEDOREA SP., S. P. I. No. 44994.)

These graceful dwarf palms are used very effectively for home decoration in Guatemala. The palms shown here were in the "corredor" of the residence of Don Enrique Dieseldorff at Coban. It is a question whether or not they will endure the steam heat of buildings in the colder parts of the United States, but they will surely be of value on the west coast and in the Gulf region. (Photographed by Wilson Popenoe, Coban, Guatemala, September, 1917; P17473FS.)



A YOUNG COYÓ TREE IN GUATEMALA. (*PERSEA SCHIEDEANA* NEES.,
S. P. I. No. 44999.)

Wilson Popenoe considers the coyó a better flavored fruit than the avocado, to which it is closely allied. Unfortunately, horticulturists have given it no attention up to the present time; doubtless careful selection and breeding will produce superior varieties, and it deserves to be called to the attention of all tropical horticulturists, as it constitutes a new fruit. It occurs in Guatemala at altitudes ranging from 300 to 6,000 feet and will also possibly succeed in southern California and in southern Florida. (Photographed by Wilson Popenoe, Sepacuite, Guatemala. November 28, 1916; P16963FS.)

44994 to 44999—Continued.

"The leaves are clustered at the ends of the branchlets, though not crowded. The leaf blades are oblong-elliptic, truncate at the base, sharply acute to shortly acuminate at the apex, 8 to 12 inches long, 4 to 7 inches broad, bright green and glabrous above, glaucous and rather heavily pubescent below; the pubescence is ferruginous on the midrib and to a less degree on some of the larger transverse veins. The venation is slightly impressed on the upper surface and very prominent below. The petioles are 1 to 1½ inches long, narrowly canaliculate toward the articulation with the leaf blade, and ferruginous pubescent like the branchlets from which they arise.

"The fruit is described as long and slender, almost black, with a large and long seed and thin flesh. The flavor is described as rich and bland, similar, but superior, to that of the avocado. It is highly esteemed by the inhabitants, and it is stated that it has even been shipped to the city of Guatemala and sold in the market there." (Quoted from description furnished with Mr. Popenoe's No. 72.)

For an illustration of a coyó tree, see Plate II.

45000 and 45001.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul, from J. B. Wijs & Zoon. Received July 21, 1917.

"Official statistics as to the exports of these mustards are lacking, but it is estimated that they aggregate about 4,000 tons annually, while the home consumption is about 500 tons. This seed in Holland is sown in May in sandy soil and must grow for two years." (*Mahin.*)

These seeds were introduced for the Bureau of Chemistry, for investigations of commercial mustards.

45000. BRASSICA ALBA (L.) Boiss. Brassicaceæ. **White mustard.**

45001. BRASSICA NIGRA (L.) Koch. Brassicaceæ. **Black mustard.**

45002 and 45003. LINUM USITATISSIMUM L. Linaceæ. Flax.

From Amsterdam, Netherlands. Procured through Mr. Frank W. Mahin, American consul, from J. B. Wijs & Zoon. Received July 21, 1917.

These seeds were introduced for the Office of Fiber-Plant Investigations.

45002. No. 1. *Blue blossom.* **45003.** No. 2. *White blossom.*

45004. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ.

Doum palm.

From Cairo, Egypt. Fruits presented by Mr. F. G. Walsingham, Horticultural Division, Gizeh Branch, Ministry of Agriculture. Received July 21 and 27, 1917.

"Obtained in the District of Aswan, Upper Egypt, where the species is fairly abundant." (*Walsingham.*)

An Egyptian palm, 3 to 9 meters (10 to 40 feet) in height, with a trunk about 30 centimeters (a foot) in diameter, either simple or, more frequently, dichotomously branched. The 20 to 30 fan-shaped leaves on the ends of each branch are sheathed at the base by spiny margined petioles. The spadices are 80 to 100 cm. (32 to 40 inches) in length, and up to 5 cm. (2 inches) thick at the base. The fruit is usually an obliquely ovoid nut about 6 cm. (2½ inches) long. (Adapted from *Muschler, Manual Flora of Egypt, vol. 1, p. 188.*)

45005. CRANIOULARIA ANNUA L. Martyniaceæ.

From Kew, England. Presented by Sir David Prain, director, Royal Botanic Gardens. Received July 23, 1917.

A coarse, wide-spreading, rank annual, about 2 feet high, with large, opposite, palmately lobed leaves with dentate margins, racemes of white flowers, and a two-valved many-seeded capsule with a long incurved beak. It is a native of northern South America, where it is known as *Creole scorzonera* and where the thick, fleshy root is preserved in sugar as a comfit. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 877.*)

45006 to 45008.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received July 23, 1917.

45006. FOENICULUM VULGARE Hill. Apiaceæ.**Fennel.**

Fenouil doux. The sweet fennel is quite popular as a winter and spring vegetable in southern Europe. The young shoots are eaten like asparagus tips, either plain boiled or served with a sauce. The plant will grow on very stony, steep slopes, where it serves as a soil binder, but it responds readily to better treatment. (Adapted from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45007. MUSA PARADISIACA SEMINIFERA (Lour.) Baker. Musaceæ.**Plantain.**

A wild seed-bearing form of the plantain, having small, oblong, greenish fruits full of seed. These fruits are about a third of the size of the common banana and are of pleasant taste, although encumbered by numerous seeds. The plant is quite ornamental and hardier than the common banana, so that it might be possible, by selection or hybridization, to extend the range of banana culture. (Adapted from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45008. PRIOTROPIS CYTISOIDES (Roxb.) Wight and Arn. Fabaceæ.

A leguminous bush with slender branches, trifoliate leaves 2 to 3 inches long, and numerous many-flowered racemes of pale-yellow flowers. It is a native of the tropical region of the eastern Himalayas and is cultivated in Nice, France, where from November to April the abundant nectariferous flowers furnish about the only food available to the bees. Its winter-blooming habit and attractive flowers make it a desirable ornamental for regions not subject to severe frost. (Adapted from *Hooker, Flora of British India, vol. 2, p. 65*, and from *letter of Dr. A. Robertson Proschowsky dated June 30, 1917.*)

45009. BUTIA CAPITATA (Mart.) Becc. Phœnicaceæ.**Palm.**

From Gotha, Fla. Fruits presented by Mr. H. Nehrling. Received July 23, 1917.

"This is the most massive of hardy Cocos species which I have. The bunches of fruits usually weigh about 50 pounds each. I raised the plant from seeds received from the late Dr. Hermann Burmeister, of Buenos Aires, who informed me that the seeds had been collected by Dr. Niederlein at Entre Rios, Argentina, about 22 years ago. These Cocos species are the most beautiful and hardy on the high pinelands, and most of them are edible and very aromatic." (*Nehrling.*)

45010. SPONDIAS LUTEA L. Anacardiaceæ. Yellow mombin.

From Bahia, Brazil. Presented by Dr. Leo Zehntner. Received July 24, 1917.

"This species is generally considered inferior in quality to the red mombin (*Spondias mombin*). Its cultivation is much less extensive, but it occurs abundantly as a wild tree in many tropical regions. The name hog-plum, which has been applied to it in the West Indies, has perhaps given it a worse reputation than it merits. This name should not, as Cook and Collins point out, cast any reflection on the character of the fruit, inasmuch as it refers to the fact that hogs are extremely fond of it and fatten upon the fruit which falls to the ground from wild trees in the forest.

"The tree is tall and stately in appearance. Under favorable conditions it may reach 60 feet in height. The leaves are 8 to 12 inches long, composed of 7 to 17 ovate-lanceolate or lanceolate-serrulate leaflets, oblique at the base and $2\frac{1}{2}$ to 4 inches in length. The yellowish white flowers are borne in loose panicles 6 to 12 inches long. The fruit is ovoid, commonly an inch in length, bright yellow, with a thin skin and an oblong seed of relatively large size. The flesh is yellow, very soft and juicy, and of subacid, rather pungent flavor. Many varieties are scarcely pleasant to the taste; others are sweet and agreeable. The fruit is usually eaten while fresh.

"This species is considered to be cosmopolitan in the Tropics. In Spanish-speaking countries it is called *jobo*. In Brazil it is known as *cajá*. In the French colonies the names *mombin jaune* and *prune myrobalan* are current.

"Occasional trees are seen in cultivation throughout tropical America. Cook and Collins state that it is planted extensively in Porto Rico. In southern Florida it succeeds, but has never become common. In California no trees of fruiting age are known. The species is rather susceptible to frost; it is found in the Tropics only at low elevations, and it probably will not withstand temperatures much below the freezing point, particularly when young." (*Wilson Popenoe*.)

45011 to 45018.

From Venezuela. Presented by Mr. H. M. Curran. Received July 24, 1917.

45011. ACACIA sp. Mimosaceæ.

"(Caracas, 500 to 3,000 feet elevation.) *Cuji*. A Prosopislike tree with a short trunk; requires more moisture than Prosopis." (*Curran*.)

45012. ACACIA FARNESIANA (L.) Willd. Mimosaceæ.

"*Cassie*. From Caracas."

A much-branched shrub 6 to 10 feet high, with compound leaves having linear leaflets and very fragrant deep-yellow flowers in large, globular heads. The cylindrical, indehiscent pods finally become turgid and pulpy. The shrub is probably a native of tropical America, but is now cultivated as an ornamental in many places and is grown in France for perfume. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 188.)

45013. BUMELIA sp. Sapotaceæ.

"(La Guaira, June, 1917.) A small tree growing in the forests along the coast, bearing large quantities of edible black fruits." (*Curran*.)

45014. FURCRAEA sp. Amaryllidaceæ.

"(No. 1128. Caracas and Puerto Cabello, 4,000 to 5,000 feet. June 27, 1917.) The cultivated *cocuisa*, one of the fiber plants of Venezuela." (*Curran*.)

45011 to 45018—Continued.

45015. MALPIGHIA sp. Malpighiaceæ.

"(Puerto Cabello.) *Simaruco*. A tree or shrub; ornamental when in fruit; fruits red, edible." (Curran.)

45016. PASSIFLORA QUADRANGULARIS L. Passifloraceæ. **Granadilla.**

"(La Guaira. June, 1917.) *Oyama*. Fruits large, 8 inches long and 6 inches in diameter. Used as a preserve." (Curran.)

A stout quick-growing climber, with large oval leaves and square stems. Its large greenish yellow fruit is not unlike a short and thick vegetable marrow and contains in its hollow center a mass of purple subacid pulp mixed with the flat seeds. The root is usually swollen and fleshy and is sometimes eaten like a yam. The plant is propagated by seeds or cuttings, and the flowers should be fertilized by hand to insure good crops. Although a native of tropical America, this plant is widely cultivated throughout the tropical regions of the Old World. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 180.)

45017. RUBUS sp. Rosaceæ. **Blackberry.**

"(No. 1119. Caracas, June, 1917.) The common blackberry of the upper slopes, 4,000 to 6,000 feet altitude." (Curran.)

45018. (Undetermined.) Araceæ.

"(No. 1140. Puerto Cabello, June, 1917.) A terrestrial or epiphytic aroid; suitable as a house plant." (Curran.)

45019. ASIMINA TRILOBA (L.) Dunal. Annonaceæ. **Papaw.**

From De Kalb, Mo. Cuttings presented by Mr. J. C. Roach. Received July 27, 1917.

"(July 23, 1917.) *Long John* papaw. Grown on the John Cole farm, 3 miles south of De Kalb." (Roach.)

The fruit of this variety is of unusual shape, very long in proportion to its breadth (sometimes almost like a banana in form), and weighs 7 or 8 ounces. The quality is good but not equal to that of several others, and the fruit is a good shipper, perhaps the best of all, the skin being notably tough and thick. (Adapted from *Journal of Heredity*, January, 1917, in which is described the offer of the American Genetic Association which brought this and many other varieties of papaws together for comparative study.)

45020 to 45022.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received July 26, 1917. Quoted notes by Mr. Popenoe.

45020. ANNONA CHERIMOLA Mill. Annonaceæ. **Cherimoya.**

"(No. 164. Bud wood from the sitio of Julio Guerra, Antigua, July 16, 1917.)

"An unusually productive and otherwise desirable cherimoya from the garden of Julio Guerra, who keeps a small tienda across the street from the rear of the Hotel Rojas. This is the most productive tree I have seen in this entire region, though I have examined a large number, not only in Antigua but in many of the surrounding villages.

"There is one peculiarity worthy of mention. Both this tree, and the one in Duenas, from which I obtained bud wood (No. 49, S. P. I. No. 43485), have been topped within the last few years, and the present crown is all new wood. These two trees are the only ones I have seen

45020 to 45022—Continued.

bearing good crops of fruit, and this naturally brings up the question, Is the productiveness of these trees due to the fact that they have been topped? It rather looks as though it may be, and it would be well worth while experimenting with some of the old seedling trees in southern California to see if topping would render them more productive. Topping is not done here with the intention of making the trees produce more fruit; it has been purely accidental in these two cases. The large limbs have been cut back within a foot or two of their union with the trunk. From the stubs numerous sprouts have made their appearance, and on these much more fruit is produced than upon the fruiting branches of the ordinary crown.

"The tree from which this bud wood was taken has a trunk about 10 inches in diameter, and the crown is now about 10 feet broad. I counted over 50 fruits on the tree, which is a large crop for a cherimoya.

"In form the fruits are heart shaped or bluntly conical, much freer from irregularities than many varieties, of large size, averaging about a pound in weight. The surface is clean and almost smooth, the carpellary areas being indicated by raised lines.

"This is a variety of pleasing form and appearance, of good size for handling and marketing, and the quality seems to be good. It ripens earlier here than most of the other seedlings, the first fruits having already dropped, while the fruits on most of the other trees I have seen are still immature. It should be tried in California."

45021. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

"(No. 165. Cuttings from the sitio of Julio Guerra, Antigua, July 16, 1917.) A productive variety of the *cherimoya*, or *anona* as it is called in the Guatemalan highlands.

"The tree is small, though not young. Apparently it has been cut back heavily, leaving only one limb of the several which formerly composed the crown. The height of the tree at present is about 15 feet, while the trunk is about 8 inches thick at the base. The crown is slender and unsymmetrical.

"At this date (July 16) the tree is carrying 102 young fruits and is still flowering. The season of ripening is from November to January. In form the fruits are cordate to conical. When ripe the larger ones will weigh more than 1 pound. The surface is rough, the carpellary areas on some specimens giving rise to short protuberances, while on other specimens the protuberances are almost wanting.

"Julio Guerra says the ripe fruit has very white flesh and is of good quality. The unusual productiveness of the parent tree commends the variety for trial in California and Florida."

45022. *CHAMAEDOREA* sp. Phœnicaceæ.

Pacaya palm.

"(No. 167a. Seeds from San Cristobal, Department of Alta Vera Paz, July 16, 1917.) Nearly every garden in Coban, San Cristobal, and other towns of Alta Vera Paz contains a number of these attractive palms, grown not so much for ornament as for the edible inflorescences which they produce. In some parts of central Guatemala, such as San Antonio Aguas Calientes, the *pacaya* is occasionally seen, but it appears to be much more abundant in Vera Paz than in any other section of the Republic. It is cultivated at varying altitudes, the lowest observed being about 3,000 feet and the highest 5,200. From the fact that it succeeds at such high elevations as 5,000 feet it must be considered

45020 to 45022—Continued.

slightly hardy and may be found sufficiently so to be grown outdoors in southern California and Florida.

"The palm grows to a height of 15 to 25 feet, more commonly the former than the latter. The trunk is slender, erect, and about 2 inches thick. The leaves are 3 to 6 feet long, with 18 to 24 pairs of pinnæ subopposite toward the base of the rachis, often becoming alternate farther up. The lowermost pinnæ are narrow and not over 8 or 10 inches long; farther up they become 18 or 20 inches long and nearly 2 inches wide. In general, the foliage of this palm suggests that of the well-known *Areca lutescens* (properly *Chrysalidocarpus lutescens*) of northern conservatories. It is graceful, of rich green color, and in every way pleasing.

"The inflorescences appear from October to May, a few coming at other seasons of the year. They appear along the trunk a short distance beneath the lowermost leaves. Before the spathes burst and the flowers appear, these buds, which are 8 to 12 inches in length, are cut for use. The part which is eaten is the tender, white, much-branched inflorescence within the spathe. Its preparation for the table consists in dipping it in a batter made of eggs and then frying it; in enveloping it in an omelet; in boiling it and serving it as a vegetable; or in mixing it with other vegetables to form a salad. When very young and tender its flavor is most agreeable. When the buds are nearly ready to burst, the inflorescence frequently has a bitter taste, which is objectionable to some people, though much liked by others.

"This palm grows on a variety of soils, seeming to do well on clay and also on black sandy loam. It is frequently planted in gardens among coffee bushes, and in some sections it is planted beneath the shade of large trees. It may be necessary to supply shade for the plant in regions such as southern California. If so, this can be easily done by means of a lath or slat house.

"As an article of food the pacaya is much used in Guatemala and by local standards commands a good price, single inflorescences selling commonly at five or six for a peso ($2\frac{1}{2}$ cents) in the regions where they are grown. The leaves are widely used for decorative purposes, being cut to adorn houses during the many fiestas which take place in this country."

45023. SOLANUM TUBEROSUM L. Solanaceæ.**Potato.**

From Honolulu, Hawaii. Tubers presented by Mr. J. M. Westgate, agronomist in charge, Hawaii Agricultural Experiment Station. Received July 24, 1917.

Portuguese Red. These were submitted by Mr. J. B. Thompson, superintendent of the Glenwood Experiment Station, Hawaii. They are important because they are remarkably immune to the diseases (late-blight, wilt, etc.) which affect the ordinary potato." (Westgate.)

45024. RIBES SPECIOSUM Pursh. Grossulariaceæ.**Gooseberry.**

From Los Angeles, Calif. Presented by Mr. P. D. Barnhart. Numbered August 2, 1917.

"The books say that this is evergreen, but this is not true, for no matter how much water may be applied to it during the rainless season, it sheds its leaves and becomes dormant. As soon as the rains set in it springs into life, the rich, dark-green foliage appearing as though it were varnished. The new growth is bright red, thickly beset with spines of the same color. The brilliant

red flowers are pendent all along the stems of the previous year's growth. A hillside covered with these plants is a glorious sight. For some reason very few of the bushes set fruit." (*Barnhart.*)

45025. ULMUS PUMILA L. Ulmaceæ. Elm.

From Peking, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer of the Bureau of Plant Industry. Received July 24, 1917.

A rather low Chinese tree, from 10 to 16 meters (35 to 50 feet) in height, with a short trunk up to 2.6 meters (8½ feet) in circumference. The bark is rough and deeply corrugated, and the spreading branches form a bushy crown. It is grown all over northern China and Manchuria as an avenue, shade, and timber tree. The strong Chinese carts are constructed chiefly from its wood. It resists drought, extremes of temperature, and neglect remarkably well and thrives in the semiarid regions of the Great Plains as well as in the Southwest. (Adapted from *notes of Frank N. Meyer*, and from *Sargent, Plantae Wilsonianae*, vol. 3, p. 244.)

45026 and 45027. BASELLA RUBRA L. Basellaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received July 26, 1917.

45026. An East Indian annual or biennial cultivated in the Tropics as a potherb, like spinach. It is branched, grows to about 6 feet high, and has fleshy, green leaves and small greenish or reddish flowers. The leaves are produced very freely during the summer, when they are eaten as greens. The seeds are sown early in March or April in a warm place, and in May or June are transplanted to the foot of a wall with a southern exposure. The plants should be supported by a trellis. The seeds are said to retain their viability for about five years. (Adapted from *Vilmorin-Andrieux & Co., Plantes Potageres*, p. 32.)

45027. Variety *cordifolia*. This is the largest variety of this species and the most cultivated, being used to cover trellises and dwellings. It is the most succulent variety also and is more used as a potherb than the others. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 21.)

45028. SECURIDACA LAMARCKII Griseb. Polygalaceæ.

Easter blossom.

From St. Vincent, British West Indies. Presented by the agricultural superintendent, Botanic Gardens, at the request of Mr. A. G. Howell, Imperial Department of Agriculture. Received July 27, 1917.

A climbing woody vine with oval leaves up to 2 inches in length and scattered, lax, simple racemes of rosy scentless flowers, each about half an inch long. The fruit is a samara, somewhat similar to the samara of the maple tree. This vine is a native of Jamaica and St. Vincent and probably other islands of the British West Indies. (Adapted from *Grisebach, Flora of the British West Indian Islands*, p. 30.)

45029 to 45031. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, Agricultural Experiment Station, Christiansted. Received July 31, 1917. Introduced for the Sugar Experiment Station, New Orleans, La.

45029. *Santa Cruz 14/7.*

45031. *Santa Cruz 13/13.*

45030. *Santa Cruz 14/47.*

45032. PHYTELEPHAS MACROCARPA Ruiz and Pav. Phœnicaceæ.
Ivory-nut palm.

From Panama, Canal Zone. Presented by Mr. B. H. A. Groth, National School of Agriculture. Received July 28, 1917.

An arborescent palm with a thick, rough, creeping trunk, from the under surface of which roots are given off. The leaves which crown the trunk closely resemble those of the coconut palm in size, shape, and disposition. The flowers emit a powerful perfume, especially the large, white, pistillate flowers, which are, however, few in number. The ripe fruit consists of three portions—an exterior part which is dark, rough, and woody; a middle part, which consists of a yellowish, oily, sweet-tasting pulp; and an inner part, the seed, which is the vegetable ivory of commerce. These fruits grow on the trunk just above the bases of the leaves in bunches of six or seven and are called *cabeza de negro* by the natives of Colombia. The palm is a native of South America and Central America. The albumen of the seed is the so-called vegetable ivory, and this becomes whiter and more opaque on exposure to the air. (Adapted from *West Indian Bulletin*, vol. 9, p. 279, 1908.)

45033. JUGLANS PORTORICENSIS Dode. Juglandaceæ.
Porto Rican walnut.

From Mayaguez, Porto Rico. Seeds presented by Dr. D. W. May, agronomist in charge, Agricultural Experiment Station. Received July 28, 1917.

A Porto Rican walnut tree 20 to 25 meters (65 to 80 feet) in height, with slightly hairy, compound leaves composed of 7 to 13 pairs of broadly oval, pointed leaflets. The round brownish red fruit, 3 to 5 centimeters (1 to 2 inches) long, incloses a wrinkled subconical nut. (Adapted from *Bulletin Société Dendrologique de France*, No. 13, p. 201, 1909.)

45034 to 45036. Poaceæ.

From Port au Prince, Haiti. Presented by Capt. John Marston, civil administrator. Received July 28, 1917.

45034 and 45035. ORYZA SATIVA L. Rice.

Haitian Rangoon rice. Grown at the Thor Experiment Station, Port au Prince.

45034. Small dark-seeded form.

45035. Large light-seeded form.

45036. ZEA MAYS L. Corn.

"Selected maize. A prolific bearer throughout Haiti—in the mountains, along the beach, and in the valleys and lowlands." (*Marston.*)

45037 to 45040.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received July 30, 1917.

45037. ANDROPOGON ERIANTHOIDES F. Muell. Poaceæ. Grass.

"*Satintop.*" An erect glaucous grass, 2 or 3 feet high, with rather narrow leaves and usually three or four sessile, erect spikes about 3 inches in length. It is a native of New South Wales and Queensland, where it is considered a very superior grass for forage purposes. It produces a heavy crop of rich, succulent foliage, spreads from the roots, and also seeds freely. (Adapted from *Bentham, Flora Australiensis*,

45037 to 45040—Continued.

vol. 7, p. 529, and from *Maiden, Useful Native Plants of Australia*, p. 73.)

45038. ANDROPOGON INTERMEDIUS R. Br. Poaceæ.

Grass.

An erect grass with rather narrow leaves and slender spikes, growing in large clumps, 2 feet or more in height. It is a native of Australia, where it is used as a forage grass. It is readily propagated from the roots. (Adapted from *Bentham, Flora Australiensis*, p. 531, and from *Agricultural Gazette, New South Wales, May 2, 1914*.)

45039. CHAETOCHELOA BARBATA (Lam.) Hitchc. and Chase. Poaceæ.

Grass.

A weak-stemmed annual grass which grows freely in open and waste ground from the West Indies to Brazil. It is a native of tropical Asia, and in Australia has been recommended as a forage grass. (Adapted from *Hitchcock and Chase, Grasses of the West Indies*, and from letter of *B. Harrison*.)

45040. PANICUM DECOMPOSITUM R. Br. Poaceæ.

Grass.

A tall, coarse, succulent, semiaquatic grass, cultivated in many parts of Australia as a forage crop. It produces an abundance of forage and is greatly relished by stock. It has yielded under cultivation as much as 3 tons of hay per acre. The seeds are produced in December and January. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 97.)

45041 to 45043. HORDEUM VULGARE COELESTE L. Poaceæ.

Barley.

From Nanking, China. Presented by Mr. J. H. Reisner, College of Agriculture and Forestry, University of Nanking. Received July 30, 1917.

"Hull-less barley, collected in Chinese fields, June, 1917. These hull-less barleys mature earlier than the hulled varieties and are harvested early in May." (*Reisner*.)

45041. Light.

45043. Dark.

45042. Medium.

45044. RUBUS RACEMOSUS Roxb. Rosaceæ.

Blackberry.

From Kingston, Jamaica, British West Indies. Seeds presented by Mr. William Harris, Hope Gardens, Department of Agriculture. Received July 31, 1917.

A rambling bush, with the branchlets, petioles, and inflorescence covered with glandular hairs and with straight or hooked prickles on the stems. The leaves are composed of five to seven oval or roundish dentate leaflets, and the large red flowers are in axillary or terminal corymbs. The plant is a native of the Nilgiri Hills, India. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 340.)

45045. BUTIA ERIOSPATHA (Mart.) Becc. Phœnicaceæ.

Palm.

(*Cocos eriospatha* Mart.)

From Gotha, Fla. Fruits presented by Mr. H. Nehrling. Received August 1, 1917.

"A most beautiful glaucous pinnate-leaved palm with slightly violet-colored leaf stems. The seeds were received under the name of *Cocos blumenavia* from

Blumenau, in Brazil, in 1892. This palm bore its first bunches of fruit four years ago. The large cream-colored flower cluster is inclosed in a spathe densely covered with a felty, brown, soft wool. The fruits have no odor. They are the size of a very large cherry or small plum, are yellow, and are covered with deep-brown spots. The fruit is the most delicious of all the hardy Cocos and reminds one of the flavor of a very good, sweet plum. The palm grows on high, dry pineland and is hardier than the orange." (*Nehrling.*)

Cocos blumenaria Hort., is referred by Beccari, *L'Agricoltura Coloniale*, vol. 10, p. 612, to his new genus *Butia*, as either *Butia eriospatha* or *B. capitata*.

45046. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Charles City, Iowa. Cuttings presented by Mr. Charles G. Patten.
Received August 4, 1917.

The origin of these cuttings is given in the following account: In Grundy Center, Iowa, there is a pear tree which endured the extremely cold winters of 1883 to 1885. This tree, now owned by Mr. O. A. Bardhall, a tailor, was imported from China as a sand pear by John S. Collins & Sons, of New Jersey, and was supposed by them to bear fruit nearly the size of *Flemish Beauty*, but only of cooking quality. The extreme hardness of the tree appealed to Mr. Charles G. Patten, of Charles City, Iowa, who planted one in his orchard, and the following year planted two more. The second year after that the tree bore fruit, but on account of its early blooming and consequent lack of pollination bore only a scanty number of small, green-colored, hard pears. (Adapted from *Charles G. Patten, Report of the Iowa State Horticultural Society for 1912, p. 162.*)

45047. MELICocca BIJUGA L. Sapindaceæ.

From Caracas, Venezuela. Presented by Mr. Henry Pittier, Agricultural Experiment Station. Received August 6, 1917.

"A small or middle-sized tree with thick foliage. The round or oval fruits are about the size of a pigeon's egg and are borne in racemes hanging from the ends of the branchlets. Each fruit has a single seed, with a layer of sweet, jellylike pulp between the seed and the green pericarp. The roasted seeds are said to be of fine flavor. The tree grows from sea level to 1,200 meters (3,900 feet) and should thrive in Florida." (*Pittier.*)

45048. DOVYALIS TRISTIS (Sond.) Warb. Flacourtiaceæ.

From Pretoria, Transvaal, South Africa. Seeds presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture, Union of South Africa. Received August 6, 1917.

"A tree which occurs on the kopjes (low hills) around Pretoria and which bears an abundance of small fruits. These fruits make a delicious jelly." (*Evans.*)

Usually an unarmed shrub or small tree, 10 to 15 feet high, with leathery, obovate, glabrous leaves with shining upper surfaces. The inconspicuous flowers appear in November, followed in January by the roundish, yellow, pulpy fruits, which are about half an inch long. The fruits are highly flavored and are eaten raw or made into jelly. (Adapted from *Sim, Forests and Forest Flora of Cape Colony, p. 130.*)

45049 to 45064. PRUNUS spp. Amygdalaceæ.**Japanese flowering cherry.**

Grown at the Plant Introduction Field Station, Rockville, Md., from scions presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. The collection came originally from the Yokohama Nursery Co., of Japan, in 1905. Numbered August 27, 1917. Quoted notes by Mr. Fairchild.

If anyone would grow these lovely flowering trees, he should be prepared to protect them from the San Jose scale by spraying them every spring before they flower (February or March) with the lime-sulphur solution.

45049 to 45052. PRUNUS SERRULATA Lindl.

45049. "Variety *Naden*. One of the loveliest of the very double, delicate pink varieties. Late flowering, about May 1. Flowers hang in clusters of two to five on long stems. Buds at first deep pink and truncate as though their tips had been cut off; they expand slowly and form wonderful, double, very large ($1\frac{1}{2}$ inches), flat flowers with petals of a delicate pink, deeper colored at the margins. Flowers in rifts. Tree extremely Japanese. Fairly vigorous. One of the loveliest for small-lawn planting."

45050. "Variety *Hosokawa*. A very beautiful double-flowered form with truncate deep-pink buds and flat light-pink flowers in clusters of two to three on rather long pendent flower stalks. Very floriferous. Resembles closely the *Naden* [S. P. I. No. 45049], but the tree appears to be less vigorous. Late bloomer (May 1 in Maryland)."

45051. "Variety *Ôjôchin*. Flowers very slightly double, large ($1\frac{1}{2}$ inches), almost pure white, on short upright stems; slightly fragrant, late flowering (May in Maryland). Though the flowers are not borne in masses and the tree is not, therefore, as showy as trees of other varieties, the unusual size and beauty of the individual flowers, which resemble single roses, make it attractive for dooryards. Foliage bronze and golden in autumn. Tree not very vigorous."

45052. "Variety *Daizen*. Single, white, medium-sized flowers (1 inch) with distinct cherry fragrance. Midseason (Apr. 20 to May 1 in Maryland). The flowers are scattered most attractively through the tree, but the green leaves come out early, mixing with the flowers and preventing the tree from being very striking. Not one of the showy varieties, but an unusually vigorous grower that produces many seeds. Foliage in autumn golden yellow.

45053. PRUNUS SIEBOLDII (Carr.) Wittmack.

"Variety *Mikuruma-gayeshi*. Early flowering (Apr. 10 to 20 in Maryland), very light pink, semidouble, medium large flowers on long upright stems. Very floriferous. Tree vigorous and because of earliness of flowering a very desirable variety, though the individual flowers perhaps are not so lovely as very double late-blooming sorts.

45054 to 45062. PRUNUS SERRULATA Lindl.

45054. "Variety *Amenogawa*. Translated meaning, 'milky way.' One of the most striking varieties because of its upright or fastigiate growth. Peculiarly suited for architectural uses. Medium size,

45049 to 45064—Continued.

white to very light pink flowers on short stems borne in great masses, concealing the branches. As seen from below, the tree suggests the characteristic name. Tree not very vigorous."

45055. "Variety *Ussusumi*. Very late variety (May 1 in Maryland), with hanging, large, very double flowers borne in clusters. The petals are tinged with light brown, giving them a strange though not unattractive appearance. The leaves, coming out at the same time as the flowers, are dark bronze. In autumn they turn to claret red after a sharp frost. Tree a fairly rapid grower, but trunk inclined to be tender. Very floriferous."
45056. "Variety *Murasaki*. Deep pink, semidouble flowers (1 inch) on short upright stems; very free flowering. While perhaps not quite so delicate as some of the very double light-pink varieties, this makes a striking show from a distance and for park use can be highly recommended. Tree low-heading, vigorous, flowering in midseason (Apr. 20 to May 1 in Maryland). Young foliage bronze color; in autumn golden yellow."
45057. "Variety *Chōshu*. Very large deep-pink double flowers (1½ inches), borne on long pendent stems in clusters of two to five. Flower buds very deep pink. Late flowering (May 1 in Maryland). Young foliage a beautiful bronze; in autumn gold and crimson. Tree not very vigorous or floriferous."
45058. "Undetermined variety. Single, medium sized (1 inch across), white flowers borne very profusely in short upright clusters; not fragrant. Midseason (Apr. 10 to 20). Tree a vigorous grower; very Japanesque. Trunk not often diseased. On fairly fertile soil forms a tree 20 feet tall in 10 years. Named, evidently incorrectly, *Jobeni*."
45059. "Variety *Asagi*. A rare variety with pale-green flowers, which when they first open have a strange but very attractive appearance; later the centers of the flowers turn red and they are then less attractive. Not showy at a distance, but delicately beautiful for use in house decoration. Tree rather delicate; late bloomer."
45060. "Variety *Wasemiyako*. Large, semidouble, almost pure white flowers, upright on short stems, very attractively arranged on the branches. Midseason (Apr. 20 in Maryland). Tree only fairly vigorous. Suitable for lawn planting, and showy from a distance."
45061. "Variety *Miyakobeni*. Midseason variety (Apr. 10 to 20 in Maryland) with semidouble flowers, 1½ inches across, borne on short upright stems in clusters of two or three. Buds pointed; quite pink. Flowers pale pink when young, turning reddish with age; slightly fragrant. Tree very floriferous; a vigorous grower, attaining 20 feet in 10 years."
45062. "Variety *Toranowo*. Large (1½ inches) extremely double flowers; deep pink when in bud, becoming delicate light pink in full bloom; hanging on long stems in clusters of two to five. Buds flat as though tips were cut off. Not so free flowering as *Naden* [S. P. I. No. 45049], but with deeper pink flowers; prominent green pistils. Tree fairly vigorous."

45049 to 45064—Continued.

45063 and 45064. *PRUNUS MUME* Sieb. and Zucc. Japanese apricot.

45063. "Variety *Tsukasa-shibori*. Semidouble, very light pink flowered variety, blooming in Maryland in the middle of April. Though spoken of as the 'flowering plum of Japan,' the 'mume' of Japan is really an apricot. The delicate fragrance of the flowers, the extremely picturesque habit of growth of the tree, and its extreme earliness (April in Maryland), make it worthy of extensive trial. It rarely sets fruit in America. Fruits sour, but delicious when pickled."

45064. "Variety *Oteno*. The 'Japanese flowering plum' is really an apricot. The picturesque form of the tree and its extremely beautiful and fragrant blossoms, combined with the fact that it is one of the earliest of all trees to bloom, often so early that the snow falls on it, have made it the favorite of Japanese poets. It is hardy in the Atlantic Coast States, and even though its blossoms often are killed by frost it is worthy of extensive trial. Its fruits are sour and remind one of the American wild plum in flavor. When pickled they form part of the army ration of Japan."

45065. *COLOCASIA* sp. Araceæ. Taro.

Grown for botanical study at the Plant Introduction Field Station, Brooksville, Fla., from tubers received in March, 1912, from Mr. J. St. Clair White, Gough, S. C.

"This is the 'yellow tanyah,' grown in small patches by some of the planters along the Cooper River and in the coast region of South Carolina. It derives its name from the yellowish color of the cooked corms and cormels, as contrasted with the much darker, somewhat bluish color of the 'blue tanyah,' the only other variety commonly grown in the same region. The yellow tanyah plant is of slightly smaller growth than the so-called blue variety. The corms and cormels are also smaller, and the buds of these are white, while those of the blue tanyah are pink. The corms of the yellow tanyah are extremely acrid and require two hours' boiling in preparation for the table. The flavor is pronounced and is richer than that of the blue tanyah. The yellow tanyah strongly resembles the *Igname branca*, or white taro [S. P. I. No. 19996], of Madeira." (R. A. Young.)

For an illustration of this taro, see Plate III.

45066 to 45069.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received August 1, 1917. Quoted notes by Dr. Bertoni.

45066. *ARECASTRUM ROMANZOFFIANUM AUSTRALE* (Mart.) Becc. *Phoenixaceæ*. Pindo palm.

"(May, 1917.) *Pindó-poi*. A very tall palm with a habit like a slender reversed pyramid. In the forests of eastern Paraguay it frequently becomes 20 meters or more in height, equaling the tallest trees of the fine forest which covers a great part of this region. The mature specimens of this palm furnish a very hard and resistant wood for 6 to 12 meters from the base of the trunk."

45067 and 45068. *EUGENIA UNIFLORA* L. *Myrtaceæ*. Pitanga.

45067. "(June, 1917.) *Añangapirih-apuá*. A fruit tree 3 to 8 meters high. It prefers to grow in wooded lowlands drained by

45066 to 45069—Continued.

arroyo basins or on rocky slopes; in such situations the little tree becomes tall, with few branches and short twigs. In open places and in good soil it becomes less tall and more branched. The fruit is quite similar in appearance and taste to the pitanga of Brazil, but the tree is more resistant to cold, for it grows in localities where the minimum temperature reaches -5° or -6° C."

45068. "(June, 1917.) *Añangapirih* variety: A variety of the preceding; equally edible."

45069. *TRICHILIA CATIGUA* JUSS. *Meliaceæ*.

Katiguá.

"(June, 1917.) A small ornamental tree found throughout the forests of Paraguay. The bark, according to our analyses, contains 20.5 per cent of crude tannin and a large proportion of coloring matter for dyeing. The leather thus tanned is of red color, which is much esteemed."

45070 to 45072. *VITIS VINIFERA* L. *Vitaceæ*.

Grape.

From Melbourne, Australia. Cuttings presented by Mr. François de Castella, Government viticulturist, Department of Agriculture, Victoria, Australia. Received August 6, 1917. Quoted notes by Mr. Castella.

45070. "*Red May*. A seedling of *Bicane* or *Raisin des Dames* which originated in the Bendigo District of this State (Victoria). It is a fine grape, of good flavor, and carries very well considering its juiciness."

45071. "*Doradillo*. The well-known grape of southern Spain. It is a very heavy bearer and is being much planted in this State (Victoria) for brandy distillation."

45072. "*King George V*. A *Gros Colman* sport, which is inferior to that variety, for the bunches are very badly filled although the berry is larger."

45073. *BUTIA CAPITATA ODORATA* (Barb.-Rodr.) Becc. *Phœnicaceæ*.
(*Cocos odorata* Barb.-Rodr.)

Palm.

From Gotha, Fla. Presented by Mr. H. Nehrling. Received July 27, 1917.

"The partially bright-red fruit, larger than those of *Cocos australis*, comes from a taller, open tree. There are not many fruits in a bunch, and I have not tasted them, but they appear to be good. This tree was also grown from seed received from Blumenau, Brazil, in 1890, which was collected by Gaertner from wild trees growing in stony or rather dry soil. These *Cocos* palms (*Cocos australis*, *C. gaertneri*, *C. datil*, *C. campestris*, *C. eriospatha*, and several others) all have rather hard bluish green leaves and thrive to perfection on our high, dry Florida pineland. I think they will grow all along the South Atlantic and Gulf coast. They all are fine ornamentals in any garden." (Nehrling.)

45074. *PRUNUS SERRULATA SACHALINENSIS* (Schmidt) Makino.
(*P. sargentii* Rehder.) [*Amygdalaceæ*. **Sargent's cherry.**]

From Jamaica Plain, Mass. Seeds presented by Dr. C. S. Sargent, Arnold Arboretum. Received August 3, 1917.

A handsome large tree, of great ornamental value; hardy as far north as Massachusetts and bearing profusely, in early spring, handsome rose-pink single flowers.

45075 and 45076. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosa-
(P. juliflora DC.) [saceæ. **Algaroba.**

From Oran, Province of Salta, Argentina. Presented by Mr. S. W. Damon.
 Received August 10, 1917.

Introduced for the work of the Office of Forage-Crop Investigations.

45075. White.

45076. Black.

45077. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Jujuy, Argentina. Seeds presented by Mr. S. W. Damon. Received
 August 11, 1917.

Reported to be frost resistant, having withstood 9 or 10 degrees C. of frost.
 Said to be a fine anona, weighing up to 2 kilograms.

45078 to 45081.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer
 of the Bureau of Plant Industry. Received August 8, 1917. Quoted
 notes by Mr. Popenoe.

45078. PERSEA AMERICANA Mill. Lauraceæ.
(P. gratissima Gaertn. f.)

Avocado.

"(No. 171. Avocado 31. From Mazatenango, Department of Suchitepequez. Altitude 1,148 feet.) *Nimah*. Bud wood of a variety obtained especially for trial in Florida, since it comes from the hot lowlands and may be better adapted to the conditions which obtain in extreme southern Florida than are those from the Guatemalan highlands.

"This is a pear-shaped fruit, sometimes curved, with a well-defined neck. It is of medium size, weighing about 11 or 12 ounces, deep green in color, with a rough surface and a thick, tough skin. The flesh is deep yellow in color, free from fiber, and of rich flavor. The seed is medium sized. On the whole the variety is satisfactory in point of flavor and quality, yet it is not good enough to be included in the Guatemalan collection on these characteristics alone."

45079. CHAMAEDOREA sp. Phenicææ.

Pacayito palm.

"(No. 168a. July 22, 1917.) Seeds of a dwarf palm which grows in the forests of the Department of Baja Vera Paz at altitudes of 4,000 to 5,000 feet.

"The Indians term this plant *ko-kiip*, which means 'small pacaya,' but as this name is applied to several other dwarf palms it does not possess much significance.

"On the mountain sides, under dense forest, this dwarf palm grows abundantly, apparently thriving in the deepest shade and in soils which are nothing but decaying vegetation. It has a slender stem, less than half an inch thick, which at times becomes half trailing, as it grows to 4 or 5 feet in length and is not strong enough to support the weight of the foliage. Probably if the plant received more light than it does in the dense forest it would remain erect and develop a stiffer trunk.

"In the young plants the leaves are once divided, resembling a fishtail in outline. They are about 6 inches in length and breadth and of light-green color. As the plant becomes older, the foliage becomes pinnate, with about three pairs of pinnæ, the terminal pair larger than the rest and joined together for some distance along the rachis.

45078 to 45081—Continued.

"This is an interesting and decorative small palm, which may be of value for house decoration in the United States. Since it comes from a cool climate it may be adapted to open-air culture in California and Florida."

45080. MIKANIA sp. Asteraceæ.

"(No. 169a. July 22, 1917.) Seeds of an herbaceous climber from the borders of Lake Amatitlan (altitude 3,900 feet). It scrambles over bushes and low vegetation, producing freely its flame-scarlet flowers, about an inch in diameter. Apparently it is a very rapid grower, and when in full bloom it is quite showy. It seems worthy of a trial in the United States."

45081. PERSEA SCHIEDEANA Nees. Lauraceæ.**Coyó.**

"(No. 170a. July 23, 1917.) Seeds of a very large variety of coyó from the town of El Rancho, in eastern Guatemala. The fruits from which these seeds were taken weighed from 1 to 2 pounds each. They were bright green in color, with very thick skins and milky white to brownish white flesh of very rich, nutty flavor. They contained a little fiber, but not as much as is commonly found in the coyó.

"These seeds should be planted in California and Florida and fruited as seedlings."

45082. BELOU MARMELOS (L.) Lyons. Rutaceæ.**Bel.**

(*Aegle marmelos* Correa.)

From Burma. Seeds presented by Rev. William H. S. Hascall, Riverside, R. I. Received August 6, 1917.

"This small tree, which is closely related to the orange, is grown in India, Ceylon, and near-by regions for its fruits. These are not much eaten by Europeans, but are popular among the natives. They are considered to have medicinal value.

"In size and form the fruit resembles an orange, but it has a hard, woody shell, inclosing a yellowish, somewhat mucilaginous pulp. The flavor is sweet and somewhat mawkish to the unaccustomed palate.

"The bel tree has been planted in southern Florida and gives promise of succeeding there, although its growth is slow. It is probably too susceptible to frost for cultivation in California." (*Wilson Popenoc.*)

45083. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

From Bogota, Colombia. Seeds presented by Sr. Alvaro Uribe. Received August 11, 1917.

"One of the best Colombian avocados, which grows at elevations of from 3,000 to 4,500 feet at temperatures ranging from 20° to 26° C. and ripens in April. The fruits are well shaped and excellent in taste. The trees are very robust and require only sufficient moisture in the air." (*Uribe.*)

45084. THEOBROMA CACAO L. Sterculiaceæ.**Cacao.**

From Tjikeumeuh, Buitenzorg, Java. Presented by the manager of the experimental garden, Tjikeumeuh, at the request of Dr. P. J. S. Cramer, chief of the Plant Breeding Station, Buitenzorg, Java. Received August 13, 1917.

"*Djati Roenggo* hybrid."



THE YELLOW TANYAH, AN EDIBLE AROID FOR THE SOUTHEASTERN COAST REGION. (*COLOCASIA* SP., S. P. I. NO. 45065.)

The yellow tanyah, *Colocasia* sp., of the coast regions of South Carolina and Georgia. This is the smaller and richer flavored of the two kinds of taro, or tanyah, grown for perhaps two centuries in that section. The corms and cormels are extremely acrid and require boiling for two hours to prepare them for the table. The flesh is white, but becomes slightly yellowish in cooking. The flavor is rich but pronounced, and a taste for it usually has to be acquired. This taro is of an undetermined species of *Colocasia* related to the dasheen, *C. esculenta* (L.) Schott, and to the enneas, or Egyptian taro, *C. antiquorum* Schott. (Photographed by R. A. Young at the Plant Introduction Field Station, Brooksville, Fla., October 16, 1912: P13878F5.)



A PROMISING HYBRID ANNONA. (ANNONA CHERIMOLA \times A. SQUAMOSA, S. P. I. No. 45181.)

The cherimoya has not fruited well in Florida, but the sugar-apple has. Since the cherimoya is much superior in flavor and shipping qualities to the sugar-apple it is believed that in this hybrid an advantageous combination of characters has been obtained and that a free-fruited type of hybrid is now available. Since it ripens in the winter like the cherimoya and is a delicious table fruit, it will be valuable for marketing in the tourist season. This hybrid was produced by Mr. Edward Simmonds, superintendent of the Plant Introduction Garden at Miami, Fla. (Photographed by Wilson Popenoe, at Miami, Fla., August 4, 1914; P16124FS.)

45085 to 45087.

From Venezuela. Collected by Mr. H. M. Curran. Received August 14, 1917.

45085. *BAUHINIA* sp. *Cæsalpiniaceæ*.

"From Guanta, Venezuela. A small ornamental leguminous tree growing in dense stands on the crest of hills in the dry, rocky, coast regions around Guanta." (*Curran.*)

45086. *SPONDIAS LUTEA* L. *Anacardiaceæ*. **Yellow mombin.**

"From the Orinoco Delta, Venezuela. A tree 100 feet in height and 3 feet in diameter, yielding large yellow edible fruits. Common name *jobo*." (*Curran.*)

45087. *MANICARIA SACCIFERA* Gaertn. *Phœnicaceæ*. **Lemiche palm.**

"From the Orinoco Delta, Venezuela." (*Curran.*)

45088. *TABEBUIA PENTAPHYLLA* (L.) Hemsl. *Bignoniaceæ*.

From Puerto Cabello, Venezuela. Seeds presented by Mr. H. M. Curran. Received August 16, 1917.

"*Apamato*. A timber tree with a profusion of ornamental pink flowers." (*Curran.*)

45089. *CITRUS NOBILIS DELICIOSA* (Ten.) Swingle. *Rutaceæ*.
Tangerine.

From Paranagua, Brazil. Cuttings purchased from Rev. R. E. Pettigrew. Received August 16, 1917.

"June 14, 1917. A tangerine orange. Known here as *Mimosa*. Assunguy River, about 30 miles north of Paranagua, State of Parana, Brazil." (*Pettigrew.*)

These cuttings were sent in response to a request for a Brazilian tangerine. Said to be "the finest tangerine that grows, as large as a grapefruit, and to retail in New York at 25 cents each."

45090. *NEPHROLEPIS* sp. *Polypodiaceæ*. **Fern.**

From Santiago de las Vegas, Cuba. Plants presented by Mr. H. A. Van Hermann, Agricultural Experiment Station. Received August 17, 1917.

"From the mountains of Cuba." (*Van Hermann.*)

Introduced for the monographic studies of *Nephrolepis* by Mr. R. C. Benedict, of the Brooklyn Botanic Garden.

45091. *PERSEA AMERICANA* Mill. *Lauraceæ*. **Avocado.**
(*P. gratissima* Gaertn. f.)

From the city of Guatemala, Guatemala. Seeds obtained by Mr. Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received August 23, 1917.

Ordinary varieties of avocados from the Guatemalan markets; sent in to be grown as stocks for the better varieties of Guatemalan avocados.

45092. LIVISTONA AUSTRALIS (R. Br.) Mart. Phœnicaceæ. Australian fan palm.

From Sydney, New South Wales. Seeds presented by Mr. W. J. Allen, Department of Agriculture, New South Wales, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received August 23, 1917.

A tall, slender palm, 12 to 18 inches in diameter and 100 to 130 feet in height. Native to eastern Australia. The moderately hard wood is light colored and is occasionally used for light construction. The leaves are used for baskets; and the unexpanded fronds, after being dipped in boiling water, are dried and the fiber used in making hats resembling Panamas. The "cabbage," either raw or cooked, is highly esteemed by the natives. (Adapted from *Maiden, Useful Native Plants of Australia.*)

45093. KENNEDYA STERLINGII Lindl. Fabaceæ.

From Sydney, New South Wales. Presented by Mr. Hugh Dixon. Received August 24, 1917.

"Put seed into boiling water; when cool, sow. Plant out seedlings in sandy, peaty soil, well drained. Plants will not stand temperatures below frost point." (*Dixon.*)

A trailing or twining leguminous perennial with trifoliolate leaves, the leaflets orbicular, and with scarlet or pale vermilion flowers in one or three pairs. Native to Western Australia. (Adapted from *Botanical Register, plate 1845.*)

45094. HOHERIA POPULNEA A. Cunn. Malvaceæ.

From Avondale, Auckland, New Zealand. Seeds presented by Mr. H. R. Wright. Received August 24, 1917.

"Commonly called *lacebark.*" (*Wright.*)

A handsome small tree or shrub, 10 to 30 feet in height, with very variable leaves and snow-white flowers produced in great profusion. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture, vol. 3, p. 1496.*)

45095. ANACARDIUM OCCIDENTALE L. Anacardiaceæ. Cashew.

From Pernambuco, Brazil. Seeds presented by Mr. Arminius T. Haeberle, American consul. Received July 17, 1917.

A spreading tree, 30 to 40 feet in height, with large leathery leaves, bearing fruits consisting of a large, swollen, pear-shaped stalk, 2 to 4 inches long, and a small kidney-shaped nut, about an inch long, at the extremity. The stalk is juicy and acid and is used in preserves; the nut has an edible seed, which is roasted and served as a dessert. The tree is supposed to be a native of the West Indies and is propagated from seeds or by layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 134.*)

45096. BERBERIS TRIFOLIOLATA Moric. Berberidaceæ. Barberry.

Plants grown at the Plant Introduction Field Station, Chico, Calif., from seeds originally received from Dr. David Griffiths, collected in Texas. Numbered August 31, 1917.

Evergreen shrub, 2 to 5 feet in height, often forming large thickets. The leaves compound, the three leaflets each three to five lobed and spiny. Berries red, aromatic, and acid, about as large as peas; ripening in May; much used for tarts, jellies, etc. (Adapted from *Contributions from the U. S. National Herbarium, vol. 2, p. 10.*)

45097 to 45100. AMYGDALUS COMMUNIS L. Amygdalaceæ.*(Prunus amygdalus Stokes.)***Almond.**

Selected varieties from seedlings of the Jordan almond, grown at the Plant Introduction Field Station, Chico, Calif., under S. P. I. No. 29515. Numbered for convenience in recording distribution.

45097. Tree No. 4.

45099. Tree No. 8.

45098. Tree No. 6.

45100. Tree No. 12.

45101 and 45102. CARISSA GRANDIFLORA (E. Mey.) DC. Apocynaceæ. Carissa.

Grown at the Plant Introduction Field Station, Miami, Fla., from seedlings of S. P. I. No. 32482. Numbered for convenience in recording distribution.

Selected varieties from seedlings of S. P. I. No. 32482, chosen because of their compact, bushy habit and their fruitfulness.

45103. CRESCENTIA ALATA H. B. K. Bignoniaceæ.

Grown at the Plant Introduction Field Station, Miami, Fla., from seed received from Mr. David Fairchild. Numbered for convenience in recording distribution.

A small ornamental tree, 10 to 20 feet high, with fascicled, trifoliolate leaves, closely allied to the calabash tree, *Crescentia cujete*. The brownish rank-scented flowers are borne singly upon the trunk; and the hard, globose fruits are about 2 inches in diameter. This tree is occasionally cultivated in the Philippines, where it was introduced from Mexico at an early date.

45104 and 45105.

Grown at the Plant Introduction Field Station, Miami, Fla., from seed brought in by Mr. Wilson Popenoe, from Cuba, in May, 1915. Numbered for convenience in recording distribution. Quoted notes by Mr. Popenoe.

45104. CHRYSOPHYLLUM CAINITO L. Sapotaceæ.

Caimito.

"In Cuba, in Jamaica, and in several other tropical American countries the caimito is a common dooryard tree and its fruit is held in the same esteem as that of the sapote and the sapodilla. As an ornamental tree it is excellent, since it has deep-green glossy foliage, satiny brown beneath. The fruits are as large as apples and either green or purple in color. They have soft, melting flesh of sweet, agreeable flavor, suggesting the sapodilla. The tree is successful in Florida as far north as Palm Beach and should be more commonly planted in that State."

Purple variety.

45105. TAMARINDUS INDICA L. Cæsalpiniaceæ.

Tamarind.

"A magnificent evergreen tree, widely cultivated in many tropical countries, preferring deep alluvial soil and abundant rainfall. The plump, slightly curved pod has a thin, brittle shell which incloses a soft brownish edible pulp containing sugar with acetic, tartaric, and citric acids. The fruit is widely used in India and Arabia as an article of diet and in Latin America as the chief constituent of a refreshing beverage."

45106. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya**

From Brisbane, Australia. Seeds presented by Mr. Leslie Gordon Corrie

Received August 23, 1917.

Seeds of a cherimoya growing wild in Queensland. To be grown as stock for improved varieties.

45107 to 45109.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle

Egypt Botanic Station. Received August 24, 1917. Quoted notes by Mr. Bircher.

45107. CHRYSOPHYLLUM MONOPYRENUM Swartz. Sapotaceæ. Satin lea

"A sapotaceous tree, up to 35 feet in height; native of the West Indies. The leaves are broad, green above, and covered with a rusty or white tomentum beneath. The small white flowers are clustered at the nodes or in the axils. The fruit is oblong, egg shaped, blackish 1½ inches in length, usually 1-seeded, and is said to be insipid. At Matania el Saff the tree has changed its flowering time and now bears flowers in July instead of November, as formerly."

45108. EUGENIA PUNGENS Berg. Myrtaceæ.**Guabiyú**

"A bush from South America, with pungent leaves and myrtlelike flowers. The black fruits, mostly in pairs, hang on slender peduncles; they are about an inch across and contain a sweet yellow flesh, inclosing one or two large green seeds. Although the fruit at present is insipid in flavor, it might be improved by continuous culture."

45109. EUGENIA SUPRA-AXILLARIS Spring. Myrtaceæ.

"A glossy leaved evergreen shrub from eastern Brazil, bearing clusters of white flowers. The black globose 1-seeded fruits are sessile, in clusters of 3 to 10, and are about the size of small cherries. The flesh surrounding the hard round seed has a sweet, very resinous taste, somewhat resembling juniper berries. Formerly it flowered in November, but it now blooms in July."

45110. JASMINUM ANGULARE Vahl. Oleaceæ.**Jasmine**

From the Union of South Africa. Seeds presented by Mr. I. B. Pol

Evans, chief, Division of Botany, Department of Agriculture, Pretoria

Received August 24, 1917.

"Collected in the eastern Province of the Cape Colony." (*Evans.*)

A climbing shrub with angled twigs and trifoliate leaves. The flowers are white and in three to seven flowered terminal or axillary cymes; the tube of the corolla is half an inch long. Native of South Africa.

45111 and 45112.

Seeds presented by Dr. David Griffiths, of the Bureau of Plant Industry

Received July 24, 1917.

45111. BAILEYA MULTIRADIATA Harv. and Gray. Asteraceæ.

A very handsome composite, common on the mesas of the Southwest in early spring. The large heads of yellow flowers with showy, bright yellow persistent rays, which are reflexed in age, are sometimes produced throughout the summer and until late in the fall. (Adapted from

Wootton and Standley, Flora of New Mexico, p. 718.)

45111 and 45112—Continued.**45112.** *ORTHOCARPUS PURPURASCENS* Benth. Scrophulariaceæ.**Purple escobita.**

A California annual about 1 foot high, with gaudy bracts and crimson or purplish corollas about 1 inch long. A common showy plant grown in the Sierra Nevada foothills, interior valleys, and coast ranges. (Adapted from Jepson, *Flora of Middle Western California*, p. 414.)

45113. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.**Black-kernel barley.**

From Siokhe, Fukien, China. Presented by C. E. Gauss, American consul, Amoy, China, who obtained it from Rev. H. J. Voskuil. Received August 24, 1917.

"This appears to be the subvariety *coerulescens*." (*H. V. Harlan.*)

45114 to 45130. *COCOS NUCIFERA* L. Phœnicaceæ.**Coconut.**

From Ceylon. Presented by Mr. Alex. E. Rajapakse, Mudaliyar, Magdalene House, Negombo, at the request of the Ceylon Agricultural Society, Peradeniya. Received through Mr. Walter A. Leonard, American consul, Colombo, Ceylon, August 25, 1917.

A collection of the various forms of coconuts grown in Ceylon, secured for trial and comparative study in southern Florida.

45114. Greenish red. Large nuts.**45115.** Brownish green. Very large size.**45116.** Red. Medium size, rather long.**45117.** Dark green. Large nuts.**45118.** Deep red. Round, medium size.**45119.** Green. Very long, medium size.**45120.** Brown (light). Medium.**45121.** Green. The ordinary variety.**45122.** Light brown. Round, medium size.**45123.** Green. Similar to S. P. I. No. 45121, but smaller.**45124.** Light red. Similar to S. P. I. No. 45120, but smaller.**45125.** Green. Perfectly round.**45126.** Red. Small nut with a very thick kernel.**45127.** Greenish red. Similar to S. P. I. No. 45125, but different in color.**45128.** White King coconut.**45129.** King coconut.**45130.** (Maldivian.) Greenish.**45131.** *NEPHELIUM BASSACENSE* Pierre. Sapindaceæ.

From Saigon, Cochin China. Seeds presented by the director, Department of Agriculture and Commerce. Received August 27, 1917.

A rather tall tree found in Cochin China, resembling *Nephelium lappaceum* in general appearance, but having straighter spines, red hairs on the lower surfaces of the leaves, etc. Its horticultural value is about the same as the rambutan (*N. lappaceum*). (Adapted from Pierre, *Flore Forestiere de la Cochinchine*, plate 319.)

45132 to 45137. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane

From Honolulu, Hawaii. Cuttings presented by the experiment station of the Hawaiian Sugar-Planters' Association. Received August 23, 1917

45132. *Demerara No. 1135.*

45133. "*Hawaiian No. 20.* Of a greenish yellow color, turning slightly red when exposed to the sun; internodes long and the rind hard; resists insects quite well and withstands winds better than many of the other varieties. It is a very popular cane in Hawaii to-day." (*Philippine Agricultural Review, July, 1914.*)

45134. "*Hawaiian No. 27.* Very large, erect, dark-green or yellow stalk somewhat resembles *Lahaina*, but has shorter internodes; rind firm but not quite as hard as *Hawaiian No. 20*; stools well and gives a good tonnage; juice usually rich in sucrose." (*Philippine Agricultural Review, July, 1914.*)

45135. *Hawaiian No. 109.* A rose-colored seedling of the *Lahaina* variety, with hard rind, very slight rooting tendency, medium eyes and internodes. It is of good milling quality, of good hopper resistance, has eight canes in the stool, and no recumbency. The purity of the juice is 92.3 per cent and the sucrose percentage 17.9. (Adapted from *Circular No. 4, Report of the Experiment Station of the Hawaiian Sugar-Planters' Association, 1907, p. 12.*)

45136. *Hawaiian No. 146.* A yellow seedling of Barbados 306, with no recumbency, very fair hopper resistance, 10 canes in the stool, medium internodes, prominent eyes, hard rind, and no rotting tendency. It is of good milling quality, and the percentage of sucrose is 16.0 and of purity 90.4. The weight of the cane per foot is 8.5 ounces. (Adapted from *Circular No. 4, Report of the Experiment Station of the Hawaiian Sugar-Planters' Association, 1907, p. 14.*)

45137. "*Hawaiian No. 227.* An erect and tall cane; rind of a yellowish color and very hard; leaves stand up well and have a midrib which is slightly greenish but not conspicuous. Tonnage and purity results at the bureau experiment station the past year were very satisfactory." (*Philippine Agricultural Review, July, 1914.*)

45138 to 45140. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar-cane.

From Honolulu, Hawaii. Seeds presented by the experiment station of the Hawaiian Sugar-Planters' Association. Received August 23, 1917.

45138. "*Lahaina.* Stalk of medium size, yellowish green in color, and somewhat recumbent on account of the extremely soft outer tissue; internodes very long. This cane was once the popular cane of Hawaii." (*Philippine Agricultural Review, July, 1914.*)

45139. *Demerara No. 1135.*

45140. *Hawaiian No. 109.* See S. P. I. No. 45135 for description.

45141. CARICA DODECAPHYLLA Vell. Papayaceæ.**Papaya.**

From Misiones, Argentina. Seeds presented by Mr. Gustavo Haack, Buenos Aires, through Mr. W. Henry Robertson, American consul general, Buenos Aires. Received August 27, 1917.

"*Yacarati-á*. A papaya, native to the Provinces of Misiones and Corrientes, Argentina. The trunk attains a circumference of 5 feet. The wood is much softer than that of the ordinary papaya; in fact, it may be said that there is no wood at all, simply bark. It is so easily worked that the peons with machete alone are able to make a canoe from the trunk in a very short time. When the tree becomes old the trunk often assumes a bottle-like shape, similar to that of the Palo borracho (*Chorisia insignis*). The fruit is large and is edible, either raw or cooked." (*Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 80*).

45142 to 45151. TRITICUM AESTIVUM L. Poaceæ.**Wheat.***(T. vulgare Vill.)*

From Sydney, Australia. Presented by Mr. George Valder, undersecretary and director, Department of Agriculture. Received August 27, 1917.

45142. *Bunyip*. A very early wheat, grown for grain only.

45143. *Comeback*. An early wheat used both for grain and hay.

45144. *Firbank*. A very early wheat used for both grain and hay.

45145. *Florence*. "It was noticed that during the 1916-17 season, when a great deal of rust was experienced all over this State, the Florence proved more rust resistant than any of the other varieties sent." (*Valder*.)

45146. *Marshall's No. 3*. A late wheat recommended for both grain and hay.

45147. *Rymer*. A late variety of wheat recommended for both grain and hay.

45148. *Sunset*. A very early wheat.

45149. *Warren*. A midseason wheat recommended for both grain and hay.

45150. *Yandilla King*. A late wheat recommended for both grain and hay.

45151. *Zealand*. A late wheat grown for hay only.

45152 to 45155.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received August 6, 1917.

45152. GNETUM GNEMON L. Gnetaceæ.

An evergreen shrub or small tree extending from the Khasi Hills of India southward to Singapore and Java. The sessile orange-colored fruits are about an inch long and are eaten by the natives. The leaves are eaten-boiled like spinach, and the bark is said to furnish a strong bast fiber. (Adapted from *Koorder and Valetton, Boomsoorten op Java, vol. 61, p. 349*.)

45153. PAVETTA INDICA L. Rubiaceæ.

Pawatta.

A common and very variable bush or small tree found throughout India and Malaysia. It bears few-flowered clusters of fragrant white

45152 to 45155—Continued.

flowers. The root is used medicinally as a diuretic and purgative; it is bitter, but not of an unpleasant flavor. The fruit is said to be pickled and eaten in Madras, and the flowers are also used as a food by some of the hill tribes. (Adapted from Watt, *Dictionary of Economic Products of India*, vol. 6, p. 115.)

45154. PHAEOMERIA MAGNIFICA (Roscoe) Schum. Zinziberaceæ.
(*P. imperialis* Lindl.)

A perennial herb of large dimensions, reaching a height of 20 feet when planted in a rich soil. The leaves are 1 to 2 feet long, lanceolate or elliptic, the upper side green, the lower side reddish brown. Flower numerous, with large, bright scarlet and green bracts crowded in a globose head. This species, originally from Mauritius, is sometimes grown as a hothouse ornamental. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, p. 1109.)

Received as *Elettaria speciosa*, but now considered as belonging to the genus *Phaeomeria*.

45155. PSYCHOTRIA BACTERIOPHILA Valet. Rubiaceæ.

A shrub, 2 to 3 meters (7 to 10 feet) high, native of the Comoro Islands, Madagascar. The elliptic or ovate-oblong, fleshy, dark-green leaves are short petioled and usually thickly covered with little tubercles formed by bacteria. The greenish white flowers are in numerous dense thyrses up to 3 inches long, and the fruits are subglobular drupes about one-quarter of an inch in diameter. (Adapted from Valetton, *Icones Bogorienses*, vol. 3, plate 271.)

45156. LITCHI CHINENSIS Sonner. Sapindaceæ.
(*Nephelium litchi* Cambess.)

Lychee.

From Canton, China. Seeds presented by Mr. Ung Wah. Received August 23, 1917.

"Sunhing lychee."

45157. SAPINDUS OAHUENSIS Hillebr. Sapindaceæ.

Hawaiian soap tree.

From Kealia lands, Waianae Mountains, Oahu, Hawaii. Presented by Mr. J. F. Rock, Honolulu. Received August 29, 1917.

A tree, 20 to 30 feet tall, remarkable in the genus for its simple leaves which never show any indication of division. It is found in the valleys of the Kaala Range on the island of Oahu, where it is conspicuous from a distance because of its pale foliage. The flesh of the shiny fruits is full of saponin and forms a strong lather when beaten up in water. (Adapted from Hillebrand, *Flora of the Hawaiian Islands*, p. 85.)

45158 and 45159.

From Calcutta, India. Presented by Mr. C. C. Calder, Royal Botanic Garden. Received August 31, 1917.

45158. BLUMEA MYRIOCEPHALA DC. Asteraceæ.

"(From Kalighora, at 1,000 feet elevation, March 5, 1917.)"

A shrubby composite, with stems as thick as the forefinger and very stout branches; native of the Sikkim Himalayas east to Burma. Flower heads very numerous, one-fourth to one-third of an inch long, clustered in pyramidal panicles. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 268.)

45158 and 45159—Continued.**45159.** *PARAMIGNYA MONOPHYLLA* Wight. Rutaceæ.

A stout, climbing, evergreen shrub, native of the Sikkim Himalayas and the mountains of Khasi at elevations of 2,000 to 5,000 feet. The wood is white, hard, and close grained. The root has a bitter saline taste, contains large crystals of oxalate of lime, and is used by the country people of Goa as an alterative tonic. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, p. 110.)

45160. *BELOU MARMELOS* (L.) Lyons. Rutaceæ. **Bel.**
(*Aegle marmelos* Correa.)

From Zafarwal, Punjab, India. Presented by Rev. H. S. Nesbit, American United Presbyterian Mission. Received September 7, 1917.

"Large specimens of bel fruit, about the largest I have ever seen, their average size being three times that commonly attained by this fruit." (*Nesbit.*)

For further description, see S. P. I. No. 45082.

45161. *CLAUCENA LANSIUM* (Lour.) Skeels. Rutaceæ. **Wampi.**
(*C. wampi* Oliver.)

From Canton, China. Seeds presented by Mr. Ung Wah. Received August 23, 1917.

A low, spineless tree, native of South China, where it is commonly grown for its fruits. Experiments are now being carried on with the *wampi* as a stock for citrus fruits.

45162 to 45166.

From Venezuela. Presented by Mr. H. M. Curran. Received August 23, 1917.

45162 and 45163. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.**Watermelon.**

"From the Guajira Indian plantation, Isla de San Carlos, May 9, 1917."

45164. *BAUHINIA* sp. Cæsalpiniaceæ.

"From Quanta, June, 1917. A small leguminous tree with velvety leaves." (*Curran.*)

45165. *PROSOPIS CHILENSIS* (Molina) Stuntz. Mimosaceæ. **Algaroba.**
(*P. juliflora* DC.)

"A leguminous tree, with small flowers in little heads or spikes. The pod is more or less thickened, and the leaves are composed of a large number of leaflets. This tree is a native of Mexico and the West Indies." (*W. Harris*, under S. P. I. No. 42643.)

45166. *TABEBUIA PENTAPHYLLA* (L.) Hemsl. Bignoniaceæ.

"From Puerto Cabello, June, 1917. *Apamato*. A timber tree with a profusion of ornamental pink flowers." (*Curran.*)

45167 to 45169.

From Paraguay. Presented by Dr. Moises S. Bertoni, Puerto Bertoni. Received September 6, 1917. Quoted notes by Dr. Bertoni.

45167. *EUGENIA* sp. Myrtaceæ.

"No. 7639. June, 1917. A shrub, 1 to 1½ meters high, from the meadows or savannahs of northeastern Paraguay at elevations of 170

45167 to 45169—Continued.

to 230 meters. The fruits are small, of an orange-yellow color, and the leaves are used in making a native medicine."

45168. *PASSIFLORA* sp. Passifloraceæ.

Granadilla

"An ornamental vine from the fields and prairies of northeastern Paraguay at altitudes of 170 to 260 meters. The annual growth, which is 1 to 2 meters, is ashy white in color. May, 1917."

45169. *PSIDIUM* sp. Myrtaceæ.

Guava

"*Araçá mbayá*. A shrub, 2 to 3 meters high, which grows among rocks and stones at altitudes of 170 to 230 meters. The fruit is sweet nonacid, yellow when ripe, ovate, and 2 centimeters or more in length."

45170 to 45175.

From Soochow, China. Presented by Mr. N. Gist Gee, Soochow University. Received September 10, 1917.

45170. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon

Chinese name *Ma ling kua* (*Mo. ling quo*), meaning horse-bell melon.

45171 to 45175. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon

45171. Chinese name *Huang mi lü* (*Waung mih loo*), meaning yellow honey melon.

45172. Chinese name *P'in kuo kua* (*Bing quo quo*), meaning apple melon.

45173. Chinese name *Zeh lung quo*, meaning lined melon.

45174. Chinese name *Su hsiang kua* (*Soo shang quo*), meaning soochow sweet-smelling melon.

45175. Chinese name *Ch'ing p'i lü jou kua* (*Tsing bi loh nyoh quo*), meaning blue-skin green-flesh melon.

45176. *PRUNUS MUME* Sieb. and Zucc. Amygdalaceæ.

Japanese apricot

Grown at the Plant Introduction Field Station, Chico, Calif., from seed presented by Mr. David Fairchild, from his place, "In the Woods," Chevy Chase, Md. The collection was imported in 1905-6 through the Yokohama Nursery Co., of Japan. Numbered September 26, 1917.

"Variety *Ginfukurin*. A white-flowered variety of the so-called 'Japanese flowering plum tree.' These are among the most picturesque of all flowering trees and compose a large part of the illustrations on Japanese screens. Because of their extreme earliness and the fragrance of their blooms they deserve a place in our gardens. The fruits are sour, but have a delicious wild flavor about them. The flowers of many varieties are often caught by the frost, but the *Ginfukurin* is rather slow in coming into bloom and so is more likely to escape." (*Fairchild*.)

45177. *TETRAZYGIA BICOLOR* (Mill.) Cogn. Melastomaceæ.

(*Miconia bicolor* Triana.)

From Homestead, Fla. Seeds presented by Mr. Charles A. Mosier. Received September 13, 1917.

A low ornamental shrub, 5 to 10 feet high, remarkable for the white powder down of the branchlets and the inflorescence. Leaves 3 to 5 inches long, entire, flowers white, in five to seven flowered cymes. Native to the West Indies. (Adapted from *Grisbach, Flora of the British West Indian Islands*, p. 254, as *Tetrazygia angustifolia argyrophylla*.)

45178. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*P. sargentii* Rehder.) [Amygdalaceæ. **Sargents' cherry.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received August 8, 1917.

"*Yamazakura* (mountain cherry)." A deciduous tree, 40 to 80 feet in height, with a trunk sometimes 3 feet in diameter and sharply serrate oval leaves, which are often reddish when young. The deep-pink flowers, from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches wide, are produced in short-stalked umbels of two to six flowers. The fruit is a small black cherry, one-third of an inch in diameter. This tree, a native of Japan, is probably the finest timber tree among the true cherries and is also remarkable for its beautiful flowers, which appear in April. The seeds germinate freely after lying dormant for a year. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 250.)

45179 and 45180.

From Dominica, British West Indies. Seeds presented by Mr. Joseph Jones, curator, Botanic Gardens. Received September 20, 1917.

45179. DURIO ZIBETHINUS Murray. Bombacaceæ.

Durian.

"I believe Dominica is the only place in the western Tropics in which the durian tree has fruited. It first bore fruit in this island as far back as 1892." (*Jones*.)

"The durian grows on a large and lofty forest tree, somewhat resembling an elm in its general character, but with a more smooth and scaly bark. The fruit is round or slightly oval, about the size of a large coconut, of a green color, and covered all over with short, stout spines, the bases of which touch each other and are consequently somewhat hexagonal, while the points are very strong and sharp. It is so completely armed that if the stalk is broken off it is a difficult matter to lift one from the ground. The outer rind is so thick and tough that from whatever height it may fall it is never broken. From the base to the apex five very faint lines may be traced, over which the spines arch a little; these are the sutures of the carpels and show where the fruit may be divided with a heavy knife and a strong hand. The five cells are satiny white within and are each filled with an oval mass of cream-colored pulp, embedded in which are two or three seeds about the size of chestnuts. This pulp is the eatable part, and its consistence and flavor are indescribable. A rich butterlike custard highly flavored with almonds gives the best general idea of it, but intermingled with it come wafts of flavor that call to mind cream cheese, onion sauce, brown sherry, and other incongruities. Then, there is a rich glutinous smoothness in the pulp which nothing else possesses, but which adds to its delicacy. It is neither acid, nor sweet, nor juicy, yet one feels the want of none of these qualities, for it is perfect as it is. In fact, to eat durians is a new sensation, worth a voyage to the East to experience.

"When the fruit is ripe it falls off the tree, and the only way to eat durians in perfection is to get them as they fall; and the smell is then less overpowering. When ripe, it makes a very good vegetable if cooked, and it is also eaten by the Dyaks raw. In a good season large quantities are preserved salted in jars and bamboos and kept the year round, when it acquires a most disgusting odor to Europeans, but the Dyaks appreciate it highly as a relish with their rice. There are in the forest two varieties of wild durians with much smaller fruits, one of them orange

45179 and 45180—Continued.

colored inside; and these are probably the origin of the large and durians, which are never found wild. It would not, perhaps, be correct to say that the durian is the best of all fruits, because it can not supplant the place of the subacid, juicy kinds, such as the orange, grape, mango and mangosteen, whose refreshing and cooling qualities are so wholesome and grateful; but as producing a food of the most exquisite flavor it is unsurpassed. If I had to fix on two only, as representing the perfection of the two classes, I should certainly choose the durian and orange as the king and queen of fruits." (*A. R. Wallace, The Malay Archipelago, p. 57.*)

45180. *GARCINIA MANGOSTANA* L. Clusiaceæ.

Mangosteen

A moderate-sized conical tree, with large leathery leaves, indigenous to Malaya. Its globular purplish brown fruit, about the size of an apple, is famed as one of the most delicious fruits of the Tropics. The delicate white juicy pulp surrounding and adhering to the seed is partly eaten. In striking contrast to it is the dense, thick, reddish rind containing tannic acid and a dye. The tree is of very slow growth and does not usually come into bearing until about 9 or 10 years old. The essential conditions for it are a hot, moist climate and deep, rich, well-drained soil. Propagation is usually by seed, but may also be effected by "gootee" or layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 164.*)

45181. *ANNONA CHERIMOLA* \times *SQUAMOSA*. Annonaceæ. Annona

Grown at the Plant Introduction Field Station, Miami, Fla., from garden No. 1803, tree C. Numbered September 25, 1917.

A hybrid between the cherimoya and the sugar-apple, produced by Mr. Edwards Simmonds, of the Miami Field Station. It combines the unusual sweetness of the sugar-apple with the firmness and better shipping quality of the cherimoya. The trees show unusual vigor, having withstood the freeze of February, 1917, without being much damaged.

For an illustration of this anona, see Plate IV.

45182 to 45189.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer of the Bureau of Plant Industry. Received September 18, 1917. Quoted in notes by Mr. Meyer.

45182 and 45183. *AMARANTHUS GANGETICUS* L. Amaranthaceæ.

Amaranth

45182. "(No. 2385a. Hankow, China. March 9, 1917.) A green-leaved amaranth, much cultivated in central China as a garden vegetable and eaten, when young, like spinach. The plant stands a great amount of moist heat and can be sown at intervals throughout the summer. As the seedlings suffer a good deal at times from damping-off, the Chinese generally have the beds raised slightly above the surrounding land and then cover the surface with a sifted mixture of soot, ashes, and lime, which acts as a fertilizer as well as a fungicide. Chinese name *Pai han ts'ai*, meaning white amaranth vegetable. This *Han ts'ai* probably can be made a popular hot-weather vegetable throughout the southern sections of the United States."

45182 to 45189—Continued.

45183. "(No. 2386a. Ichang, Hupeh, China. March 24, 1917.) Mixed strains of *Han ts'ai*, a leaf vegetable for hot weather. It thrives best in well-drained, rich, light soil, but it is not very particular after once having started well. Mix seeds with sifted dry soil or sand and sow broadcast over a well-prepared bed; or sow between the poles on which Yard Long beans, etc., are raised."

45184. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.
(*I. aquatica* Forsk.)

"(No. 2387a. Wuchang, Hupeh, China. June 15, 1917.) The *Kuan ts'ai*, an annual herb, is cultivated by the Chinese as a hot-weather leaf vegetable and is prepared and eaten much like spinach. It is usually sown in rows at intervals during the spring and summer, to insure a continuous supply of greens. It thrives best in a rather wet, heavy soil and withstands being submerged (even for several days) without injury. The foliage resembles that of the sweet potato a good deal, but the roots are not fleshy. The young shoots are cut at intervals until the plants become exhausted. The white or pale rose-colored flowers appear in July and August, and shortly after flowering the plants set a good supply of seeds which are harvested for the next season's crop. Chinese name *Kuan ts'ai* (*Wōng tsai*), meaning jar vegetable or bamboo-leaf vegetable."

45185 to 45189. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45185. "(No. 2388a. Taianfu, Shantung, China. March 1, 1917.) A heavy winter *pai ts'ai* of fine quality, making firm much-elongated heads. Sown out in early August and transplanted in rich well-worked soil; it must not suffer from lack of water. Can be kept throughout the whole winter when stored in a cool dugout cellar; can also be held in good condition for several months when hung from the rafters of a cool storeroom or kept in an airy box."

45186. "(No. 2389a. Hankow, China. June 9, 1917.) A spring and autumn variety of Chinese cabbage of open growth; eaten boiled, like kale or mustard sprouts. Sown from early April to the end of May for spring consumption; for autumn use it is planted from the end of July to the end of August. Chinese name *Ya hao pai ts'ai*, meaning fresh-leaf cabbage."

45187. "(No. 2390a. Hankow, China. June 9, 1917.) An open-headed, very dark green variety of Chinese cabbage, sown out in September; persists throughout the winter in mild climates. Chinese name *Hei pai ts'ai*, meaning black *pai ts'ai*. Probably this should be cultivated as greens for winter in the South Atlantic and Gulf States."

45188. "(No. 2391a. Hankow, China. June 9, 1917.) An open-headed variety of Chinese cabbage, sown out in August and used as a fall and winter vegetable. Chinese name *Chiang kan pai ts'ai*, meaning oar-shaped *pai ts'ai*. This should probably be cultivated as greens for winter use in the South Atlantic and Gulf States."

45189. "(No. 2392a. Hankow, China. June 9, 1917.) A winter variety of *pai ts'ai* with solid heads; sown out in September. Chinese name *Nan ching pai ts'ai*. This should probably be cultivated as greens for winter use in the South Atlantic and Gulf States."

45190 to 45193.

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in distribution.

45190. ANISACANTHUS THURBERI (Torr.) A. Gray. Acanthaceæ.

Ornamental acanthaceous shrub, 2 to 4 feet high, with opposite, near lanceolate, thickish leaves and showy purplish red funnelform flowers solitary or in leafy clusters in the axils. Native of Mexico, New Mexico and Arizona. (Adapted from *Gray, Synoptical Flora of North America* vol. 2, part 1, 2d ed., p. 328.)

45191. ARGEMONE PLATYCERAS Link and Otto. Papaveraceæ.

A rose-colored form of a showy flowered annual occasionally met with in gardens and found growing wild in the Southwestern States. A very spiny, glaucous-leaved, robust plant with large poppylike flowers.

45192. QUAMOCLIDION MULTIFLORUM Torr. Nyctaginaceæ.

A low diffusely branched perennial herb with smooth, ovate leaves and large purplish red flowers in clusters in a broad calyxlike involucre. The showy flowers have a thick, rather long tube spreading into a wide limb. Native from Colorado to western Texas and Arizona. (Adapted from *Wootton and Standley, Flora of New Mexico*, p. 222.)

45193. ZAUSCHNERIA CALIFORNICA Presl. Onagraceæ.

California fuchsia.

A half-hardy perennial with showy scarlet flowers resembling those of fuchsia but erect, not pendent. It is rather variable in form of leaves and in hardiness. Native of the southwestern United States.

45194. CUDRANIA TRICUSPIDATA (Carr.) Bureau. Moraceæ.
(*C. triloba* Hance.)

Grown at the Yarrow Plant Introduction Field Station, Rockville, Md. from seed received from the P. J. Berckmans Co., Augusta, Ga., November, 1916. Numbered for convenience in distribution.

A small deciduous tree, with slender, thorny branches and fleshy subglobose edible fruits. The P. J. Berckmans Co., in sending in the seed, reported that although the one tree left in their nursery at that time had fruited very well it was rather difficult to get many fruits at one time, because the laborers seem very fond of them.

45195. MADHUCA INDICA Gmel. Sapotaceæ.
(*Bassia latifolia* Roxb.)

Mahwa

From Seharunpur, India. Seeds presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received September 24, 1917.

A large deciduous tree from northern India, cultivated widely in India for its cream-colored, fleshy, sweet corollas, which are dried for eating and for the manufacture of spirits. Introduced for trial in Florida.

45196. CROTON TIGLIUM L. Euphorbiaceæ. Croton-oil plant.

From St. Louis, Mo. Presented by Mr. G. H. Pring, Missouri Botanical Garden. Received September 24, 1917.

"A small ornamental tree with ovate leaves varying in color from metallic green to bronze and orange. The powerful purgative, croton oil, is obtained from the seeds by crushing." (*J. B. S. Norton.*)

45197. BRUNSFELSIA HOPEANA (Hook.) Benth. Solanaceæ.**Manacá.**

From Para, Brazil. Seeds presented by Senhor J. Simão da Costa. Received September 24, 1917.

A small spreading shrub, native to the States of Amazonas and Sao Paulo, Brazil. The leaves are alternate, narrow, and dark green; the spreading purple flowers are very fragrant. In Brazil the plant is used medicinally, the root serving as an antiseptic, a purgative, and a diuretic. By means of ether, a perfume is extracted from the flowers. (Adapted from *Curtis's Botanical Magazine*, vol. 55, pl. 2829, and from *Correa, Flora do Brazil*, p. 102.)

45198 to 45203.

From the Kachin Hills tract, Bhamo District, Upper Burma. Presented by E. Thompstone, Esq., Deputy Director of Agriculture, Northern Circle, Burma. Received September 24, 1917. Quoted notes by Mr. Thompstone.

45198. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Job's-tears.

"Kachin name, *Mung-Kawng*. Job's-tears is seldom cultivated; it occurs on the banks of streams and watercourses, and sporadically in the clearings of the hillmen. The seed, when ripe, is collected and utilized."

45199 to 45203. ZEA MAYS L. Poaceæ.**Corn.**

"The maize is scattered broadcast in the rainy weather, usually July, after the land has been plowed and harrowed. The crop is weeded once or twice, beyond which no care is given it."

45199. "Kachin name, *W'Lwe*; Burmese name, *Kauk-saw*."

45200. "Kachin name, *W'Hpraw*; Burmese name, *Pyaung-pyu*."

45201. "Kachin name, *Hkainu*."

45202. "Kachin name, *U-Pan*; Burmese name, *Ah-lat*."

45203. "Kachin name, *W'Hti*; Burmese name, *Kauk-kyi*."

45204 to 45214.

From Leverville, Belgian Kongo. Presented by Père Hyacinthe Vanderyst, Jardin Agrostologique, through Mr. C. V. Piper, of the Bureau of Plant Industry. Received September 24, 1917. Quoted notes by Père Vanderyst.

45204 and 45205. ANDROPOGON FINITIMUS Hochst. Poaceæ. Grass.

45204. "(*Andropogon lugugaensis* VDR. variety *levervillensis* VDR. Jardin Agrostologique, Leverville, July, 1917.) A good forage grass."

45205. "(Jardin Agrostologique, Leverville, July, 1917.) A good forage grass."

Received as *Andropogon familiaris* variety *levervillensis* VDR.

45206. ANTHEPHORA CRISTATA (Doell) Hack. Poaceæ. Grass.

"(Jardin Agrostologique, Leverville.) A good pasture, when young, for small animals."

45207. CENCHRUS BARBATUS Schumach. Poaceæ. Grass.

"(Jardin Agrostologique, Leverville, July, 1917.) Unsuitable for pasture on account of its thorny fruits."

45204 to 45214—Continued.

45208. *CHLORIS BREVISETA* Benth. Poaceæ.

Gra

"(Jardin Agrostologique, Leverville, July, 1917.)" A West African grass from the Cape Coast region, resembling *Chloris compressa* in the structure of its flowers. The new growth is said, in Belgian Kongo, to form an excellent pasture for small animals.

Rhodes grass, *C. gayana*, also from western tropical Africa, has succeeded so well in the Southern States that this grass also should receive a thorough trial.

45209. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.

Tabucki gra

"(Variety *astoloniferus* VDR. Jardin Agrostologique, Leverville, July, 1917.)"

45210. *PANICUM DIAGONALE* Nees. Poaceæ.

Gra

"(Jardin Agrostologique, Leverville.) Useful as pasture in the young state."

A perennial tufted grass reaching a height of more than 3 feet. Native to Central and East Africa.

45211. *PENNISSETUM BENTHAMII* Steud. Poaceæ.

Gra

"(Jardin Agrostologique, Leverville, July, 1917.) A good forage species for cattle."

45212. *PENNISSETUM SETOSUM* (Swartz) L. Rich. Poaceæ.

Gra

"(Jardin Agrostologique, Leverville, July, 1917.) Pasture in the young state for small animals."

A tall, leafy, branching perennial, erect or ascending from a geniculate base, the long, flat blades pubescent or scabrous, the purplish spikes 10 to 15 centimeters (4 to 6 inches) long. On grassy slopes and in open woods in Mexico and West Indies to South America, and also in tropical Asia and Africa. (Adapted from *Hitchcock and Chase, Grasses of the West Indies*, p. 354.)

45213. *PEROTIS INDICA* (L.) Kuntze. Poaceæ.

Gra

(*P. latifolia* Ait.)

"(Jardin Agrostologique, Leverville.)" An annual or subperennial grass, with stout and branching leafy culms and usually short, broad, rigid, ciliate blades, common throughout tropical Africa and Asia. It grows to a height of 10 inches, and is said in the Belgian Kongo to be a good pasture in the young state for small animals.

45214. *SPOROBOLUS MOLLERI* Hack. Poaceæ.

Gra

"(Cultivated in the Jardin Agrostologique, Leverville, July 8, 1917. Value as yet undetermined.)"

45215. *PRUNUS CONRADINAE* Koehne. Amygdalaceæ.

Cherry

Grown at the Plant Introduction Field Station, Rockville, Md., from scion presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. Introduced originally by the Arnold Arboretum, Jamaica Plain, Mass. Numbered September, 1917.

A handsome tree from western China, up to 40 feet in height, with trunk 8 to 20 inches in diameter, thin, pale-green leaves, and white to deep bluish-colored flowers, an inch or less across, which appear early in the spring. It is very similar to Sargent's cherry (*Prunus serrulata sachalinensis*).

45216. PRUNUS SUBHIRTILLA PENDULA (Sieb.) Tanaka. Amygdalaceae. Rose-bud cherry.

Grown at the Plant Introduction Field Station, Rockville, Md., from scions presented by Mr. David Fairchild from his place, "In the Woods," Chevy Chase, Md. Originally introduced through the Yokohama Nursery Co., of Japan. Numbered September, 1917.

A small tree with drooping branches, mostly narrowly oval, light-green leaves, and long-stalked clusters of rose-pink flowers three-quarters of an inch across. One of the handsomest of early-flowering trees, producing its dainty flowers in profusion. Hardy in central New York. Deserves to be planted in all parts and as dooryard trees when there is room enough. Grows to very large size, but flowers when 3 years old. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2841.)

45217 and 45218. FRAGARIA spp. Rosaceae. Strawberry.

From Bedford, England. Plants purchased from Laxton Bros. Received September 28, 1917.

45217. Keen's Scedling. An old and well-known English sort of the finest quality, which does not generally succeed in America. Flowers perfect; fruit large, roundish, often cockscomb shaped, dark purplish scarlet, with polished surface and rich, highly flavored, firm flesh. (Adapted from *Downing, Fruits and Fruit Trees of America*, p. 992.)

45218. Old Pine, or Carolina. An American variety, with perfect flowers and medium-sized, conical, bright-scarlet fruit, with a neck and solid, juicy, rich flesh. (Adapted from *Downing, Fruits and Fruit Trees of America*, p. 998.)

45219. CALYCOPHYSUM BREVIPES Pittier. Cucurbitaceae.

From Venezuela. Seeds presented by Mr. Henri Pittier, director, Estacion Experimental y Catastro de Baldios, Caracas. Received September 28, 1917.

"(Cerro de Avila, above Caracas, August, 1917.) A *Calycophysum*, which I collected at about 1,700 meters altitude on the slopes of the Avila Mountains above Caracas. It is a high climber, growing in the outskirts of the forest. The fruit is large and quite ornamental, the pericarp being of an intense orange-yellow color. It looks very attractive to a thirsty person, and when I picked the first one I opened and tasted it without losing time. The flavor was quite sweet, and I lost no time in swallowing the 'swallowable' part of a whole fruit. Five minutes later my mouth was burning just as if I had swallowed a very hot pepper and my insides soon began to make themselves felt. For several hours I had nausea, and some fever, with a strong headache. Then it passed away. I suspect the peppery agent to be contained in the disseminants of the seeds, and if it could be made away with, the fruit would certainly be very palatable. It goes mostly by the name of *parcha de culebra*, *parcha* being a name common to the edible *Passiflora* fruits. But I am also assured that it is the *coco de mono*, to which depilatory properties are ascribed. The facial hair ornaments (?) which are the glory of men in other countries are here the common privilege of an unusual number of the members of the fair sex, and as they do not relish it, it is said that they make away with it by means of the endocarp of the *coco de mono*. I would not be surprised if this were the fruit in question, but the same name is given

also to the fruits of the two or three native species of *Couroupita*, and probably to those of other members of the *Lecythideæ*. So the question of the depilatory properties is not yet settled." (*Pittier*.)

45220. (Undetermined.) Apocynaceæ.

Lorocco vine

From Tegucigalpa, Honduras. Seeds presented by Mr. I. H. Cammach.

"La Misión." Received September 28, 1917.

"This is a deciduous perennial vine which grows best on moist mountain sides where the climate is always temperate. Its flowers and flower buds are fine for flavoring milk and vegetable soups, especially potato soup, giving it the flavor of oysters. The vine should have a space of 5 to 10 feet for climbing and spreading, and it will require greenhouse protection in cold weather." (*Cammach*.)

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U. S. DEPARTMENT OF AGRICULTURE.

BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1917.

(No. 53; Nos. 45221 to 45704.)



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BUREAU OF PLANT INDUSTRY.

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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge.*

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Gardens.*
B. T. Galloway, *Plant Pathologist, Special Research Projects.*
Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service.*
Wilson Popenoe and J. F. Rock, *Agricultural Explorers.*
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H. C. Skeels, *Botanist, in Charge of Collections.*
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C. C. Thomas, *Assistant Plant Introducer, in Charge of Jujube Investigations.*
E. L. Crandall, *Assistant in Charge of Photographic Laboratory.*
P. G. Russell and Patty Newbold, *Scientific Assistants.*
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Edward Goucher, *Plant Propagator.*
J. E. Morrow, *Superintendent, Plant Introduction Garden, Chico, Calif.*
Henry Klopfer, *Plant Propagator.*
Edward Simmonds, *Superintendent, Plant Introduction Garden, Miami, Fla.*
Charles H. Steffani, *Plant Propagator.*
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Wilbur A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*
E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*
Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartless, *Seharunpur, India*; Barbour Lathrop, *Chicago, Ill.*; Dr. H. L. Lyon, *Honolulu, Hawaii*; Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Little River, Fla.*; Dr. L. Trabut, *Director, Service Botanique, Algiers, Algeria*; E. H. Wilson, *Arnold Arboretum, Jamaica Plain, Mass.*; E. W. D. Holway, *Faribault, Minn.*; Dr. William Trelease, *University of Illinois, Urbana, Ill.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM OCTOBER 1 TO DECEMBER 31, 1917 (NO. 53; NOS. 45221 TO 45704).

INTRODUCTORY STATEMENT.

This inventory covers the period from October to December, inclusive, 1917. During this time Agricultural Explorer Frank N. Meyer was on his last trip, exploring the upper Yangtze River around Ichang, and Agricultural Explorer Wilson Popenoe was in the Vera Paz region of Guatemala (fig. 1). The collections of these two men form a substantial addition to the new plants of this country.

Mr. Meyer found about 40 varieties of citrus fruits in the region around Ichang; of these he sent in some interesting varieties of mandarins and pummelos (Nos. 45311 to 45315) and a large-fruited Wampi (*Clauca lansium*, No. 45328), which is closely related to Citrus but has small pubescent fruits. As yet this fruit is practically unknown in America, although a great favorite with the Chinese. Mr. Meyer's suggestion that the large ocher-yellow flowered *Lycoris aurea* and the carmine-red flowered species *L. radiata*, together with its yellow variety, ought to thrive throughout the South is worth emphasizing. He found these in great abundance in Hupeh Province (Nos. 45525 to 45528). The Ichang lemon (No. 45534) he thinks may be distinctly hardier than the common lemon, and the rare Chinese horse-chestnut (*Aesculus wilsonii*, No. 45532), which has narrower leaves than the common species grown by us, is now well established in America through the seeds which Mr. Meyer procured.

It seems probable that few of the introductions by Mr. Meyer will be of greater value than some of his cultivated varieties of that blight-resistant species of pear (*Pyrus calleryana*, No. 45586) which he calls the domestic crab-apple pear and which he found in many varieties near Kingmen, Hupeh. The pioneer work of Dr. Reimer has brought this species of pear to the foreground because of its peculiar resistance to blight, and some of these cultivated sorts bid fair to become of great value for stocks upon which to work the

more luscious varieties of *Pyrus communis*. Under No. 45592 Mr Meyer sent in 100 pounds of seed of the small-fruited wild pear of the same species, and specialists are experimenting with these.

Wilson Popenoe sends in from the Vera Paz region a small-fruited chayote no larger than a hen's egg (No. 45350); the inga, which he says is a fruit worthy of a place in the gardens of the amateur in southern Florida (No. 45351); an interesting tropical walnut (*Juglans mollis*, No. 45352), which makes a small tree only 45 feet



FIG. 1.—Wilson Popenoe's routes of exploration in Guatemala from September 6, 1916, to December 13, 1917. The search for hardy avocados which Mr. Popenoe made during the 16 months of his agricultural exploration of Guatemala constitutes a noteworthy horticultural accomplishment. His journeys on muleback and on foot traversed over 2,000 miles of the mountain trails and roads of that Republic and resulted in the successful introduction into this country of 36 distinct types of the hard-shelled hardy avocado. Each one of these represents the successful importation of bud sticks from a selected seedling avocado tree from which he collected the fruits and of which he took record photographs, not only of the fruit itself but of the tree as well. The collection is further remarkable in that each number in it is backed up by a careful description, written on the spot, of the characteristics of the tree from which the budwood was taken. This precaution will make it possible years hence to study the variation which takes place in the fruit, as well as the trees which are grown from the imported buds. In addition to this, which was Mr. Popenoe's main quest, he discovered and introduced two wild relatives of the avocado, the *anay* and the *coyó*, both worthy of the careful attention of tropical horticulturists, and also 190 other especially selected rare and useful species of plants which he believes can be grown in the warmer sections of the United States and similar regions throughout the world.

tall, but which fruits abundantly and bears nuts with even thicker shells than those of our own black walnut; a species of tropical *Rubus* (No. 45356) with soft seeds and of good flavor, which fruits abundantly and should be tried in the Southern States; and seeds of the *coyó* (*Persea schiedeana*, No. 45354), on which will be grafted his large-fruited variety of this new fruit, which he declares is more highly esteemed by the Indians of the Vera Paz region than the avocado itself and deserves to be brought to the attention of all

tropical horticulturists as a hitherto entirely neglected tropical fruit tree. From the valley of the Rio Polochic he sends in seeds of a handsome flowering shrub (*Pogonopus speciosus*, No. 45360) with brilliant scarlet bracts suggestive of the poinsettia; and from the vicinity of San Cristobal a wild grape (No. 45361) with fair-sized berries, which he thinks is the largest fruited grape he has yet seen in the Tropics and should be capable of development by selection.

Six of Mr. Popenoe's selected avocados are described in this inventory, including the Akbal (No. 45505), which he considers, on account of its earliness, one of his promising sorts, the Manik (No. 45560), Kaguah (No. 45561), Ishim (No. 45562), Kanan (No. 45563), and Chabil (No. 45564). Under No. 45506 he describes the fruit of a species of *Malpighia* called the *azerola*, which may be hardier than its relative, the Barbados cherry, and if so would be well worth distributing as a dooryard shrub in southern California and even in southern Texas.

The possibility of a terrestrial orchid which would produce a good flower for use in the house is emphasized by Mr. Popenoe in his introduction, from an altitude of 4,000 feet, of the *Sobralia macrantha* (No. 45547), which grows there to a height of 4 feet and has a large showy flower. His "ilama," a species of *Annona* (*A. diversifolia*, No. 45548), which appears to be adapted to the lower levels of the tropical coastal plain, can not fail to be of interest to tropical horticulturists, for it has fruits as fine in flavor as the cherimoya and will thrive on the coastal plain where the cherimoya refuses to grow. Dr. Safford has named after Mr. Popenoe a new species of *Dahlia* (No. 45578), which in his opinion is in all probability the ancestor of the cactus dahlia and to which the breeders may have to turn to rejuvenate their stock of this wonderful flowering plant.

With the introduction of the large-fruited tropical hawthorn (No. 45575), which Mr. Popenoe found growing in the mountains of Guatemala and which is used for the production of a distinctive and delicate preserve by the people there, we now have in this country the material for the breeding of new types of hawthorns, which should be adapted to a wide range of conditions. Our numerous native species, the Chinese *Crataegus pinnatifida* with its large-fruited strains, and this Guatemalan tropical species, *C. stipulosa*, should attract some one to the problem.

The remarkable breeding work of Dr. Walter Van Fleet is well known to the rosarians, but his activities in other fields are less well known. This inventory gives descriptions of selections and hybrids (Nos. 45330 to 45342) which he has produced by the breeding of the chinquapin (*Castanea pumila*), the Chinese chestnut (*C. mollissima*), the American chestnut (*C. dentata*), and the Japanese species (*C.*

crenata). He has been working with these for many years and has a remarkable collection of bearing trees at his place in Maryland. The selections of the Chinese species are so resistant to the bark disease as to make it safe to recommend them for orchards, where with careful watching they ought to be as safe investments as peaches or pears or others of our fruit trees. They are not large forest trees. The fate of that other Chinese chestnut (*Castanea henryi*, No. 45670), which grows to a height of 75 to 100 feet on the upper Yangtze River as far west as Mount Omei, remains to be seen. If it should prove resistant to the bark disease it might in a measure take the place of our forest chestnut in certain localities. Although the barberry has been given a jolt through the association which its rust disease has with the rust of wheat, there are species that are perfectly safe from attacks of rust and may be grown freely as doorway shrubs. Let us hope that this is the case with Dr. Van Fleet's cross (No. 45477) between *Berberis wilsonae*, which E. H. Wilson found in China, and *B. aggregata*. The hybrids are very handsome plants for borders, having a spreading low-growing habit, and are hardy in Maryland.

We are so accustomed to think of our own cereal crops as always having been the great food-producing plants of the world that it is a surprise to find in Mexico under cultivation to-day a relative of our common pigweed which in the times of Montezuma formed one of the staple cereal foods of the Aztecs. The seeds of this amaranth (*Amaranthus paniculatus*, No. 45535) filled 18 granaries, each holding 9,000 bushels, in the time of the great ruler. It was made into cakes known as "alegría" and was so highly valued that it had a part in the religious ceremonies of that time. Our present interest in it arises from the fact that it has a most remarkably low water requirement and consequently has distinct possibilities in our Southwest, where water is precious. It may be hoped that our predilection for other but no more palatable grains will not be so strong as to make it impossible to market this ancient one of the Aztecs, which Mrs. Zelia Nuttall sends in from Mexico.

Lamb's-quarters (*Chenopodium album*) has been used in this country by many people, and those who know it declare it is more delicate than that introduced vegetable, spinach, which is now the fashion. The huauhtli of the Aztecs (*Chenopodium nuttalliae*, No. 45536), which Mrs. Nuttall sends in from Mexico, is there used when the seeds are "in the milk," and she considers it a most delicate vegetable.

One of the most interesting of recently introduced vegetables is the mitsuba of Japan (No. 45247), sent in by Mr. Barbour Lathrop as one of the commonest vegetables among the Japanese. Botanically it is *Deringa* (or *Cryptotaenia*) *canadensis*, and curiously enough

this species, although it occurs from Nova Scotia to Texas and was known in the old days as honewort, has never been cultivated or even used as a vegetable by Americans. It is easily grown and deserves to be carefully studied by amateurs. Its food value is probably similar to that of celery.

The success of the Japanese flowering cherries makes the introduction of the pink-flowered wild forest cherry (*Prunus serrulata* var. *sachalinensis*, No. 45248) of particular interest. The cherry-wood timber from it is said to be excellent, and if some one would plant a hillside with this tree it would not only make a place to which we should all sooner or later want to make a pilgrimage as one does to the Azalea gardens near Charleston, but in the years to come it would furnish for market an excellent quality of cherry wood.

So remarkable as money producers have been some of the new grasses introduced through the Office of Foreign Seed and Plant Introduction that cultivators are watching with a great deal of interest the behavior of the Napier grass of Rhodesia (*Pennisetum purpureum*, No. 45572). According to Harrison, the agrostologist of South Africa, it promises there to be one of the most remarkable drought-resistant fodder plants yet introduced into cultivation, making a yield of 27 tons of green fodder per acre and remaining green even during six or eight months of drought. It must be remembered that the South African dry season comes in the winter, when it is cool. It is very different from the scorching droughts of our own Plains. However, Napier grass is already making its mark in this country.

It is always with keen satisfaction that one records the arrival of the second generation of an imported plant in the New World. That loveliest of all flowering legumes *Camoensia maxima* (No. 45608), from the coast of Portuguese West Africa, was introduced in 1901 and scattered in vain in Florida. A plant was sent to Dr. R. M. Gray, in charge of the Harvard Experiment Station at Cienfuegos, Cuba. This has grown and flowered and produced fruit, so that this liana, named after the great Portuguese poet, Camoens, is successfully established in the West Indies. It deserves to be grown wherever it can be in the tropical forests of the New World.

The species of crab apple which was formerly much cultivated in Japan (*Malus prunifolia rinki*, No. 45679) but was driven out by the American varieties, according to Prof. Sargent, of the Arnold Arboretum, may prove as hardy as *Pyrus baccata*, and he suggests that it be crossed with the Siberian crab-apple varieties and new hardy varieties of apples procured for trial in Canada.

Dr. Trabut's suggestion that the wild Moroccan pear (*Pyrus mammosa*, No. 45612), which inhabits the dry sandy noncalcareous soils of the Mamora, should be considered as a stock is well worthy of trial.

There is a place for a peach in the southern part of Florida, if only the tree suited to that region of tropical southern rains can be found. A freestone variety (No. 45662) of the peen-to type from the French West Indies, which is said to resist decay, may furnish this southern peach.

It has seemed a little strange that so excellent a fruit as that of the passion vine, which ranks among the best fruits of Australia should still be practically an unknown fruit on our markets. The hard-shelled sweet granadilla of Guatemala (*Passiflora ligularis*, No. 45614), which instead of being purple in color is a deep orange-yellow and instead of shriveling keeps its plump form, may attract people more than the commoner species, *P. edulis*.

Mr. Frank N. Meyer's introduction of the grafted varieties of the Chinese jujube has resulted in the development of that very heat-resistant fruit in Texas and California. The introduction of 34 distinct varieties of jujubes from the island of Mauritius, which belong to a different botanical species (*Ziziphus mauritiana*, Nos. 45625 to 45658), may make the creation of new forms possible. This Mauritian fruit is said to be sold in the villages of the island in large quantities and to be appreciated by the Europeans as well as by the native inhabitants of the island. This inventory announces also the introduction of a third species from Argentina (*Ziziphus mistol*, No. 45227). Since no breeding has ever been done in this genus, it will be interesting to see what can be done in the crossing of these different species. News comes of the existence in the Punjab of jujubes of large size, whether of one of these species is not yet definitely known here.

The wide use of *Casuarina equisetifolia* as a street tree in southern Florida has engendered considerable discussion as to its benefits. It is possible that the Sumatra species (*C. sumatrana*, No. 45659), which is more handsome, may prove hardy enough and beautiful enough to warrant its substitution for the "Australian pine."

The breeders who are working with the genus *Ribes* will be glad to get the Chinese form, *Ribes fasciculatum chinense* (No. 45689), which is unique in that it ripens its bright-red fruits in the fall of the year instead of in the summer.

The Smyrna fig industry is an established thing in California, but apparently much work remains to be done in getting the best series of caprifig varieties which will harbor the Blastophaga. Dr. Trabut's hybrid (No. 45235) between the Abyssinian or Erythrean fig (*Ficus palmata*) and the common fig (*F. carica*) may play a rôle in this respect, since the Abyssinian species makes excellent caprifigs.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by Mr. H. C. Skeels and the descriptive and botanical notes arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all the publications of this office. The manuscript of this inventory has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD.

Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., June 15, 1921.

INVENTORY.¹

45221 to 45225. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Guatrache, Pampa, central Argentina. Presented by Señor Juan Williamson, Estacion Agronomica, through the Office of Cereal Investigations. Received October, 1917.

45221. Barletta (Pampa). **45223. Barletta** 24.

45222. Barletta 77. **45224. Barletta** 44.

45225. Barletta from a farm in the vicinity of the experiment station (not from the fields of the station).

45226 and 45227.

From Oran, Argentina. Seeds presented by Mr. S. W. Damon. Received September 6, 1917.

45226. PASSIFLORA sp. Passifloraceæ. Granadilla.

"A yellow-fruited, acid type which I consider superior to the purple type." (*Damon.*)

45227. ZIZIPHUS MISTOL Griseb. Rhamnaceæ. Mistol.

A spiny tree, native to Argentina, up to 30 feet in height, with oval, leathery, short-stemmed leaves about an inch long and edible, black fruits about one-third of an inch in diameter.

For previous introduction and description, see S. P. I. No. 44436.

45228. NEPHROLEPIS sp. Polypodiaceæ. Fern.

From Finca Chejel, Baja Vera Paz, Guatemala. Plants collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received October 19, 1917.

"(No. 175. October 1, 1917.) A common fern found along watercourses in the vicinity of Purula, Baja Vera Paz, at altitudes of about 5,000 feet. It forms dense masses in open places among scrub." (*Popenoe.*)

45229. PRUNUS NIGRA Ait. Amygdalaceæ. Plum.

From Ottawa, Canada. Seeds purchased from Mr. W. T. Macoun, Dominion horticulturist, Central Experimental Farm. Received October 1, 1917.

"The cultivated trees of *Prunus nigra* in this district practically never have mature fruit on them, as the fruits become diseased before they become fully

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction; and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will be subject to change with a view to bringing the forms of the names into harmony with recognized American codes of nomenclature.

grown. It has been this way as long as I can remember—at least for 25 years. There might occasionally be a year with a few good fruits; but, as a rule, there are none. However, there is one man about here who has been cultivating these fairly extensively and keeping his trees thoroughly sprayed, and I am getting the seed from him. There is just a possibility of these being crossed with *Prunus americana*, as he has a few trees of the latter in his orchard." (*Macoun.*)

45230. BRUNSFELSIA HOPEANA (Hook.) Benth. Solanaceæ.

From Para, Brazil. Seeds presented by Senhor J. Simão da Costa. Received October 1, 1917.

"A slender twiggy free-branching shrub; leaves lanceolate-oblong, thin in texture, rich dark green, paler beneath. Flowers small but freely produced, solitary or in pairs all along the leafy growths; limb light violet-blue on first opening, fading to almost pure white with age; tube very slender, curved upwards, nearly white, 1 inch long; calyx three-fourths of an inch long, teeth obtuse." (*Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 582.*)

45231. ANNONA MARCGRAVII Mart. Annonaceæ.

From Caracas, Venezuela. Seeds presented by Mr. Henri Pittier, director, Estación Experimental y Catastro de Baldios. Received October 4, 1917.

A tree with the trunk, form of the branches, and color of the bark resembling those of the orange, but with different leaves, flowers, and fruit. Its leaves are about half a foot long, deep green and glossy above, pale green beneath, and tongue shaped. The yellow flower is large and conspicuous, and has a sickening sweet odor. It is followed by the fruit, which ripens in December and January. This fruit, which is conoid in shape and about 5 inches in greatest diameter, is green and white mixed or pale green on the outside, and the surface is areoled, with a brown tubercle in each areole. Not until the fruit falls of its own accord is it eaten, and then it is so soft that it can be peeled with the fingers. The yellowish pulp has an odor like fermenting bread dough to which honey has been added, with a sweetish subacid and somewhat bitter taste. The seeds are oval, golden yellow and glossy, smooth, and hard. This tree is a native of Brazil and Venezuela. (*Adapted from Safford, Contributions from the National Herbarium, vol. 18, pt. 1, p. 25.*)

45232. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From the Philippine Islands. Presented by Mr. O. D. Conger, U. S. N., Washington, D. C. Received October 5, 1917.

"From the Province of Cavite, near the municipality of Alfonso. Seeds of a tomato growing wild in the Philippines. The vine should spread out in every direction and climb up on any near-by house or tree. I found these vines growing in the jungles usually in places where there had been habitations in former times. The fruit grows to the size of a large cherry." (*Conger.*)

45233 and 45234. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Tokyo, Japan. Presented by Mr. Teizo Ito, chief, Plant Industry Division, Imperial Department of Agriculture and Commerce. Received October 12, 1917.

45233. *Iga-chikugo.*

45234. *Aka-komugi.*

45235 and 45236.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 13, 1917. Quoted notes by Dr. Trabut.

45235. *FICUS PALMATA* × *CARICA*. Moraceæ.

Fig.

"I am sending you seeds of *Ficus palmata* fertilized by *F. carica*. *F. palmata*, originally from Abyssinia and Erythrea, appears interesting; first, as one of the probable ancestors of *F. carica*; second, the male plants are excellent caprifigs to supply the Blastophaga. The autumn figs (Mammoni) now have the male flowers and at this moment it is still possible for the Blastophaga to carry the pollen. The female plants yield mediocre edible fruits. The hybrids should be interesting for desert regions."

45236. *VITIS VINIFERA* L. Vitaceæ.

Grape.

"*Cabernet* × *Malbec No. 2*. *Cabernet* is, in my opinion, the best vine for red wine of the Bordeaux type; but it is a light bearer. I have interesting hybrids. The seeds which I am sending you come from a number which have given us an excellent wine."

45237 and 45238. PRUNUS ARMENIACA L. Amygdalaceæ.

Apricot.

From Chefoo, China. Seeds presented by Mr. A. Sugden, Commissioner of Customs, through Mr. Lester Maynard, American consul, Chefoo. Received October 13, 1917.

45237. Seeds sent in as a supposed cross between apricot and plum, resulting from grafting plums on apricots. The seeds do not appear to differ from those of ordinary apricots.

45238. "Seeds of some very good apricots, which were of fair size, good flavor, and looked well; there was a lot of red about them." (*Sugden*.)

45239. DEGUELIA sp. Fabaceæ.

(*Derris* sp.)

From Luzon, Rizal Province, Philippine Islands. Fruits presented by Mr. E. D. Merrill, Bureau of Science, Manila. Received October 15, 1917.

"*Tugli* or *tubli*. This is supposed to be one of the species of *Derris* used here for fish poison. The seeds are not so used, only the bark and roots." (*Merrill*.)

45240. CYNARA HYSTRIX Ball. Asteraceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 15, 1917.

"Seeds of *Cynara hystrix* from Morocco, a species near to *C. cardunculus*, interesting to study and to hybridize. The seeds are large." (*Trabut*.)

45241. ACTINIDIA ARGUTA (Sieb. and Zucc.) Planch. Dilleniaceæ.

From Bronx Park, N. Y. Cuttings from Mr. George V. Nash, New York Botanical Garden. Received October 18, 1917.

"There is no finer climbing shrub for porches in this latitude than *Actinidia arguta*. Its foliage, which is of a beautiful dark-green color with reddish midribs, seems to be practically free from diseases. Its flowers are large, greenish white, and attractive. It is a very vigorous grower and will

cover a trellis 20 feet long and 10 feet high in two or three years. The flavor of the fruits is very sweet and pleasant, reminding one of figs. They are about the size of damson plums, have very thin skins, and are filled with extremely small seeds. A climbing plant which deserves the widest distribution." (*Fairchild.*)

45242 to 45245.

From Honolulu, Hawaii. Seeds presented by Mr. J. F. Rock, botanist, College of Hawaii. Received October 19, 1917.

45242. *HIBISCADELPHUS GIFFARDIANUS* Rock. Malvaceæ.

"The *Hau kuahiwi* is a remarkable tree. At first appearance one would think it to be the common *Hau* (*Hibiscus tiliaceus*), but at closer inspection one can not but wonder at the most peculiar shape of the deep magenta flowers and the large yellow tuberculate capsules. It is a rather low tree, with not erect but rather inclining trunk a foot in diameter, with a many-branched round crown. It differs from the genus *Hibiscus* in its very peculiar flowers [which are curved and convoluted] and mainly in the calyx, which is not persistent with the capsules but drops together with the bracts as soon as the capsules are formed." (*Rock.*)

45243. *HIBISCADELPHUS HUALALAIENSIS* Rock. Malvaceæ.

A tree, 16 to 23 feet high, with erect trunk, white bark, somewhat reniform leaves, and small ovate capsules. It belongs to the almost-extinct genus *Hibiscadelphus*, of the three species of which two are represented by a single tree each and the present one by a dozen or so living trees. Seedlings of all the species are growing, however, in various Hawaiian gardens.

This exceedingly interesting and distinct species was found by the writer in the year 1909 on the lava fields of Mount Hualalai, in North Kona, Hawaii, and in the forest of Waihou of the same district, where about a dozen trees are still in existence. The writer revisited the above locality in March, 1912, and found the trees in flower, while on his previous visit, June 18, 1909, only a few worm-eaten capsules could be found. The trees are badly attacked by several species of moths which feed on the leaves and mature capsules. Mr. Gerrit Wilder, however, succeeded in growing a few plants from healthy seeds collected by the writer. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 301.)

45244. *PITTOSPORUM HOSMERI LONGIFOLIUM* Rock. Pittosporaceæ.

The variety differs from the species in that the leaves are very much longer and the capsules are smaller. The tree is quite common at Kapua, South Kona, Hawaii, on the lava flows, and occurs also at Kilauea and Hualalai, but does not reach such a height and size as at Puuwaawaa. The trees of the latter locality are loaded with fruit during June and July, while those of Kapua bear mature fruit during the month of February. However, the fruiting season of these, like nearly all the other Hawaiian trees, can not be relied upon. The fruits of *Pittosporum hosmeri* and variety are a source of food for the native crow, which pecks open the large woody capsules and feeds on the oily seeds within. (Adapted from *Rock, Indigenous Trees of the Hawaiian Islands*, p. 161.)

45242 to 45245—Continued.**45245. VACCINIUM RETICULATUM** J. E. Smith. Vacciniaceæ. Ohelo.

"Seeds of *Vaccinium reticulatum*, a species which grows up to an altitude of 10,000 feet on the big islands (Maui and Hawaii). It is the well-known *ohelo* of the natives, and the fruits are eaten and used similarly to your eastern *Vacciniums*." (Rock.)

A low erect shrub, 1 to 2 feet high, the stiff crowded branches angular and densely foliose; leaves coriaceous; flowers solitary; berry globose, one-third to one-half an inch in diameter, pale rose or yellow, covered with a waxy bloom. Found in the high mountains of Hawaii and eastern Maui from about 4,000 up to 8,000 feet, where it grows gregariously, often covering large tracts of open ground. The shining fleshy berry, the *ohelo*, is the principal food of the wild mountain goose. Although astringent, it is not unpleasant to the taste, and makes a good preserve. (Adapted from Hillebrand, *Flora of the Hawaiian Islands*, p. 271.)

45246. CARICA PAPAYA L. Papayaceæ. Papaya.

From Honolulu, Hawaii. Seeds presented by Mr. G. P. Wilder. Received October 6 and 19, 1917.

"Seed from selected fruit." (Wilder.)

45247. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ. Mitsuba.
(*Cryptotaenia canadensis* DC.)

From Brooklyn, N. Y. Plants presented by Mr. C. Stuart Gager, director, Brooklyn Botanic Garden. Received October 26, 1917.

"Mitsuba is a common wild plant of the American continent, being scattered pretty well over America from New Brunswick to South Dakota and southward to Georgia and Texas. It belongs to the family which has furnished a number of our good garden vegetables such as celery, the carrot, and the parsnip.

"Mr. Lathrop writes from Japan regarding mitsuba: 'Udo costs more than mitsuba, and far less of it is consumed by the poor. Every part of the mitsuba is edible, and its leaves, stems, and roots are cooked as desirable vegetables. Like udo, it is grown from seed and in rather light soil. It requires less time for maturing than udo and is procurable on the market at far less expense. Mitsuba is popular with everybody from the highest rank to the lowest. Besides being cooked, the stems are eaten as we eat celery.'

"Pai ts'ai has found its niche in our agriculture, and large quantities are being consumed; and udo is being grown by a large number of amateurs who have learned to like it. This new vegetable, mitsuba, also from the Orient, may find its place beside them. The ease of culture of mitsuba; the fact that the plant can be grown over such a wide range of territory; and the excellence of its green leaves, blanched shoots, and roots, for use in a variety of ways, should appeal to our practical sense and induce us to give it a careful test under widely varying conditions and through a number of seasons. Especially should it be tried on celery lands—in the Northern States, along the Gulf coast, and in California—to determine its possible economic importance and to see if it has any points of advantage over celery." (Fairchild.)

45248. PRUNUS SERRULATA SACHALINENSIS (Schmidt) Makino.
(*P. sargentii* Rehder.) [Amygdalaceæ. **Sargent's cherry.**

From Tokyo, Japan. Seeds purchased from the Tokyo Plant, Seed, & Implement Co. Received October 19 and 22, 1917.

A large tree, attaining a height of 60 to 80 feet, which produces valuable wood; the bark is reddish and lustrous, the branches becoming chestnut brown in age. The leaves are large, ovate, glabrous, and lustrous, turning to crimson and yellow in autumn. Flowers two to four together, very showy, rose pink, about $1\frac{1}{2}$ inches across, appearing before the leaves. Fruit the size of a pea, bright red, becoming black and shining at maturity. A valuable timber tree of great ornamental value which is hardy in New York and Massachusetts and bears its handsome broad flowers in great profusion. Native of northern Japan, Sakhalin, and Chosen (Korea). (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2839.)

45249 and 45250.

From Kerman, Persia. Seeds presented by Capt. J. N. Merrill, First Regiment of Cavalry, Persian Army. Received October 10, 1917.

45249. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. **Pummelo.**
(*C. decumana* Murray.)

"Seeds of the Persian 'pumaloe,' a fruit like that of China and the Philippines, about 8 or more inches in diameter, with a skin that is spongy, very thick, and oily. The fruit is slightly bitter and acid, but not disagreeable to the taste. Used by the Persians as a decorative fruit; a preserve made by boiling the skin with sugar is highly esteemed. The fruit is grown at Khabis, some 65 miles east of here, elevation 1,800 feet, near the edge of the great desert of Persia. Personally, I found the fruit, when eaten with powdered sugar, a good dish, though the Persians do not eat it." (Merrill.)

45250. LAWSONIA INERMIS L. Lythraceæ. **Henna.**

"A shrub bearing very fragrant, small, white, rose-colored, or greenish flowers. It is readily propagated from cuttings, grows in the form of a bush sending up shoots, and is suitable for hedges. When kept clipped it is not unlike privet. Its odor at short range is rank and overpowering, but from a distance it is like that of mignonette. On the shores of Central America the land breezes frequently waft the odor out to sea. This species is the 'sweet-smelling camphire' of Solomon. It is a native of western Asia, Egypt, and the African coasts of the Mediterranean, and now grows wild in some parts of India. It is also cultivated in many countries. It has been a favorite garden plant in the East from the time of the ancient Egyptians to the present day." (W. E. Safford.)

45251 to 45262.

From China. Seeds presented by Dr. Yamei Kin, Peking, China. Received October 23, 1917. Quoted notes by Dr. Kin.

45251 to 45254. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45251. "*Mi sze pai ts'ai.* Especially useful for salting down."

45252. "*Yu ts'ai.* Light variety, from Yuyao, Chekiang Province. Said to be a very rapid grower, coming to maturity in four weeks

45251 to 45262—Continued.

or, at most, not more than six weeks from the time of germination. It is specially prized for its sweet 'buttery' flavor which I have heard is characteristic of certain varieties of lettuce. It is not eaten raw or for salad purposes; but, dropped into boiling hot water after being cut up in fairly large pieces, it makes a staple green vegetable. The rapid growth struck me as being valuable, for if in the same time as is necessary for growing lettuce one can obtain a good cabbage green, it will undoubtedly be as popular here as it is in China."

45253. "*Pai ts'ai*. From Taianfu, Shantung Province."

45254. "*Yu ts'ai*. Dark-colored, late variety from Yuyao, Chekiang Province. Grows taller than the very early kind, and while also good for greens, is of a darker color, it is said; and the seed is used largely for the production of the so-called rapeseed oil that is used so largely in food all through Middle China and South China."

45255 and 45256. *CASTANEA CRENATA* Sieb. and Zucc. Fagaceæ.

Chestnut.

"Japanese chestnuts from Hangchow, Chekiang Province."

45255. A variety with large nuts.

45256. A variety with medium-sized nuts.

45257. *CUCUMIS MELO* L. Cucurbitaceæ.

Muskmelon.

"White melon from Tientsin, Chihli Province."

45258. *CUCUMIS SATIVUS* L. Cucurbitaceæ.

Cucumber.

"Early cucumber from Taianfu, Shantung Province."

45259. *CUCURBITA PEPO* L. Cucurbitaceæ.

Squash.

Parti-colored squash from Taianfu, Shantung Province."

45260 and 45261. *RAPHANUS SATIVUS* L. Brassicaceæ.

Radish.

45260. "Round radish. Will not stand frost. Plant about July."

45261. "Long radish. Hardy. Plant later than the round variety."

45262. *SPINACIA OLERACEA* L. Chenopodiaceæ.

Spinach.

"*Mi sze Chi Yien*. From Woosung, Kiangsu Province. Spinach, to be planted the last of August. Cover with soil 1 inch thick; will sprout in a month. Can cut one crop in January and another in March."

45263 to 45320.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received October 6, 1917. Quoted notes by Mr. Meyer.

45263. *BRASSICA* sp. Brassicaceæ.

Mustard.

"(No. 2393a. Hankow, Hupeh Province. June 5, 1917.) *Chieh tzü*. Mustard seeds, said to have come from the north, where mustard is a summer crop. However, it might have been grown as a winter crop in the Yangtze Valley. Price, 37 cents, Yuan silver, per catty [$1\frac{1}{2}$ pounds]. Test this mustard as a summer crop where flax thrives; as a winter crop in the Gulf States."

Received as *Brassica juncea*, but apparently not this species.

45263 to 45320—Continued.

45264. *PERILLA NANKINENSIS* (Lour.) Decaisne. Menthaceæ.
(*P. arguta* Benth.)

“(No. 2394a. Hankow, Hupeh Province. June 5, 1917.) *Hei su tzũ* (black perilla). An annual herb, germinating very early in the year; generally with purple foliage, though green plants are seen also. The young plants are eaten as a potherb or are used to give flavor to soups. The odor, however, is not pleasing to most people, since it resembles that of the bedbug (*Cimex*). The seeds are used medicinally for coughs and in throat troubles, together with other preparations.”

45265. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ.
(*P. ocymoides* L.)

“(No. 2395a. Hankow, Hupeh Province. June 5, 1917.) *Pai su tzũ* (white perilla). An annual herb grown entirely for its seed, from which is extracted an oil that is used in waterproofing. The seeds are also used medicinally, like the preceding number, and as a bird food.”

45266 to 45268. *ORYZA SATIVA* L. Poaceæ.

Rice.

45266. “(No. 2396a. Hanyang, Hupeh Province. March 6, 1917.) *Ching shui mi ku* (clear-water rice grain). A fine local variety of rice, said to be prolific and early ripening. On account of its earliness to be tested primarily in California.”

45267. “(No. 2397a. Changsha, Hunan Province. May 12, 1917.) *Li ku* (corn grain). A fine variety of rice, said to be an early ripener. To be tested like the preceding number.”

45268. “(No. 2399a. Hankow, Hupeh Province. March 9, 1917.) *Ching shui mi* (clear-water rice). A fine quality of early ripening rice. To be tested like the preceding numbers.”

45269 to 45295. *SOJA MAX* (L.) Piper. Fabaceæ.
(*Glycine hispida* Maxim.)

Soy bean.

[Note: These numbers are nearly all said to be late-ripening varieties of soy beans; they come from a region greatly resembling in climate the Gulf States (southern parts). They should therefore be tested in districts where cotton and rice are grown.]

45269. “(No. 2401a. Hankow, Hupeh Province. March 7, 1917.) *Huang tou* (yellow bean). A small to medium-sized, yellow soy bean, used mostly as a human food in the form of bean curd.”

45270. “(No. 2402a. Wuchang, Hupeh Province. March 9, 1917.) *Huang tou*. A small to medium sized, yellow soy bean.”

45271. “(No. 2403a. Changsha, Hunan Province. May 16, 1917.) *Huang tou*. A small, yellow soy bean, used almost exclusively for bean-curd production.”

45272. “(No. 2404a. Ichang, Hupeh Province. March 24, 1917.) *Huang tou*. A small, yellow soy bean, said to ripen in early August. Used like the preceding number.”

45273. “(No. 2405a. Changsha, Hunan Province. May 16, 1917.) *Huang tou*. A small to medium-sized, yellow soy bean. Used like the preceding numbers.”

45274. “(No. 2406a. Ichang, Hupeh Province. May 24, 1917.) *Huang tou*. A medium-sized, yellow soy bean with a dark hilum. Said to be a medium late ripener.”

45263 to 45320—Continued.

45275. "(No. 2407a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A large yellow soy bean."
45276. "(No. 2408a. Changsha, Hunan Province. May 16, 1917.)
Huang tou. A medium-sized, yellow soy bean."
45277. "(No. 2409a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A very small variety of yellow soy bean."
45278. "(No. 2410a. Wuchang, Hupeh Province. March 9, 1917.)
Hsiao huang tou (small yellow bean). A very small variety of yellow soy bean."
45279. "(No. 2411a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A small, greenish yellow soy bean."
45280. "(No. 2412a. Ichang, Hupeh Province. March 24, 1917.)
Huang tou. A small, greenish yellow variety of soy bean, used almost entirely in bean-curd production."
45281. "(No. 2413a. Shuichaipang, Hupeh Province. April 2, 1917.)
Hsiao huang tou (small yellow bean). An exceedingly small variety of yellowish soy bean, used in making bean curd."
45282. "(No. 2414a. Changsha, Hunan Province. May 12, 1917.)
T'ien ch'ing tou (field green bean). A medium-large, pale-green variety of soy bean; rare. Eaten as a sweetmeat when roasted with sugar; it is then a very tasteful, wholesome, and nourishing product."
45283. "(No. 2415a. Changsha, Hunan Province. May 16, 1917.)
Ch'ing tou (green bean). A dull pale-green variety of soy bean."
45284. "(No. 2416a. Changsha, Hunan Province. May 16, 1917.)
Ch'ing tou. A small, green soy bean, often used as an appetizer with meals, when slightly sprouted, scalded, and salted. Also eaten as a fresh vegetable when having firm sprouts 3 inches long."
45285. "(No. 2417a. Ichang, Hupeh Province. March 24, 1917.)
Ch'ing pi tou (green skin bean). A dark-green soy bean of medium size, used like the preceding number. The beans are also eaten fried in sweet oil with salt sprinkled over them, as an appetizer before and with meals."
45286. "(No. 2418a. Hankow, Hupeh Province. March 7, 1917.)
Ch'ing tou. A medium-sized, dull-green variety of soy bean, used in the same way as the preceding number."
45287. "(No. 2419a. Ichang, Hupeh Province. March 24, 1917.)
Ch'ing p'i tou. A medium-sized variety of green soy bean, often speckled with black. Eaten like No. 2416a [S. P. I. No. 45284]."
45288. "(No. 2420a. Changsha, Hunan Province. May 16, 1917.)
A rare variety of soy bean, of pale-green color, with brown splashes."
45289. "(No. 2421a. Changsha, Hunan Province. May 12, 1917.)
Ch'a hua tou (tea-flower bean). A peculiar variety of soy bean, of dull brown color, said to ripen very late. Locally much eaten when roasted, with salt sprinkled over, like salted peanuts. Very nourishing and appetizing. Well worth introducing to the American public as a new, wholesome, and nourishing sweetmeat."

45263 to 45320—Continued.

45290. "(No. 2422a. Ichang, Hupeh Province. March 24, 1917.) *Hei tou* (black bean). A medium-large, black soy bean, used when boiled, as a food for hard-working field animals and for oil production; it is also eaten by the poor."
45291. "(No. 2423a. Hankow, Hupeh Province. March 7, 1917.) *Hei tou*. A medium-sized, black soy bean, used like the preceding number."
45292. "(No. 2424a. Wuchang, Hupeh Province. March 9, 1917.) *Hei tou*. A medium-sized variety of black soy bean; said to be an early ripener. Used like No. 2422a [S. P. I. No. 45290].
45293. "(No. 2425a. Wuchang, Hupeh Province. March 9, 1917.) *Hsiao hei tou* (small black bean). A small, flat, black soy bean, used when boiled, salted, and fermented as the main ingredient in a sauce; also fed, when boiled, to water buffaloes."
45294. "(No. 2426a. Changsha, Hunan Province. May 16, 1917.) *Hei tou*. A small, flat soy bean of shining black color, used like the preceding number."
45295. "(No. 2427a. Changsha, Hunan Province. May 16, 1917.) *Hei tou*. A small, round variety of soy bean of dull black color; used like No. 2425a [S. P. I. No. 45293]."
- 45296 and 45297. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
45296. "(No. 2428a. Ichang, Hupeh Province. March 24, 1917.) *Hua ssü chi tou* (mixed or variegated four seasons bean). Multi-colored strains of garden beans, much cultivated as summer vegetables. To be tested in the southern sections of the United States."
45297. "(No. 2429a. Ichang, Hupeh Province. March 24, 1917.) *Ssü chi tou* (four seasons bean). A reddish variety of garden bean, used like the preceding number. To be tested like No. 2428a."
- 45298 and 45299. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ. Adsuki bean.
45298. "(No. 2430a. Hankow, Hupeh Province. March 7, 1917.) *Hung tou* (red bean). A large, red, adsuki bean eaten boiled with dry rice and in soups; also pounded with sugar into a paste and used as a filling in certain cakes. Produces bean sprouts of excellent juicy quality, which can be raised at home in winter."
45299. "(No. 2431a. Hankow, Hupeh Province. May 30, 1917.) *Hung lü tou* (red-green bean). A rare variety of adsuki bean, of red color. Utilized like the preceding number. Said to ripen in August."
45300. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.
- "(No. 2433a. Hankow, Hupeh Province. March 7, 1917.) *Lü tou* (green bean). Mixed strains of dull and shining green mung beans; utilized like No. 2430a [S. P. I. No. 45298]."
45301. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
- "(No. 2434a. Hankow, Hupeh Province. March 7, 1917.) *Pai chiang tou* (white precious bean). A black-eyed, white cowpea eaten as a human food; boiled with dry rice generally, but also much used in stews and soups. The young pods are used a great deal as a vegetable; they are also dried for winter use, and in some localities are pickled in brine."

45263 to 45320—Continued.

45302. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ. Catjang.

"(No. 2435a. Shuichaipang, Hupeh Province. April 2, 1917.) *Hung chiang tou* (red precious bean). A small, red-brown cowpea grown on pebbly river flats. Used as human food."

45303 and 45304. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

45303. "(No. 2436a. Ichang, Hupeh Province. March 24, 1917.) *Wan tou*. A medium-sized, pale yellow variety of pea, grown as a winter crop throughout the Yangtze Valley on rice lands which have been drained for the winter months. Sown in October and harvested in April. The peas are boiled either with the pods, when very tender, or after shelling, when old. When dry they are used in stews or soups and baked into cakes. In the winter the sprouted peas are eaten after having been scalded. A fresh gelatine is also made from them, much eaten during the hot summer months, with sauce and pickles, as a 'pick-me-up' between meals. To be tested as a winter crop in the southern sections of the Gulf States and in California."

45304. "(No. 2437a. Hankow, Hupeh Province. March 7, 1917.) *Wan tou*. A small, pale-yellow variety of pea, grown and used like the preceding number."

45305 to 45307. *VICIA FABA* L. Fabaceæ. Broad bean.

45305. "(No. 2438a. Ichang, Hupeh Province. March 24, 1917.) *Ts'an tou* (silkworm bean). A medium large variety of broad bean, much grown as a winter crop on rice lands which have been drained for the cool season. The beans are much eaten when fresh, like green peas, and they form a very tasteful and nutritious dish. After soaking in water over night the dry beans are often fried in oil, and salt is sprinkled over them; they are then eaten as a delicacy, like salted peanuts. The Chinese name is possibly given on account of the silky hairs covering the outside and the inside of the pods. To be tested as a winter crop in the southern parts of the Atlantic and Gulf States and on the Pacific coast; as a summer crop in the intermountain regions and along the northern Pacific coast."

45306. "(No. 2439a. Hankow, Hupeh Province. March 7, 1917.) A somewhat smaller variety than the preceding number, otherwise the same remarks apply to it."

45307. "(No. 2440a. Ichang, Hupeh Province. March 24, 1917.) *Hsiao ts'an tou* (small silkworm bean). A very small variety of broad or horse bean. Grown like the two preceding numbers. A meal is made from this bean, which is eaten by the poor in the form of noodles and dumplings. To be tested like No. 2438a."

45308. *LENTILLA LENS* (L.) W. F. Wight. Fabaceæ. Lentil.
(*Lens esculenta* Moench.)

"(No. 2441a. Ichang, Hupeh Province. March 24, 1917.) *Ching tou* (capital bean). A small brown variety of lentil, grown as a winter crop on rather poor lands in the mountain districts of western Hupeh. The seeds are eaten boiled in stews and soups, but are not much appreciated. To be tested like No. 2438a."

45263 to 45320—Continued.

45309. *INDIGOFERA TINCTORIA* L. Fabaceæ.

Indigo.

“(No. 2442a. Hankow, Hupeh Province. June 14, 1917.) *Huai lan* (blue legume). A plant from which a blue dye is obtained; said to be grown on well-drained land. The seed is sown in April, and the twigs with leaves are harvested in August.”

45310. *BRASSICA* sp. Brassicaceæ.

Mustard.

“(No. 2444a. Ichang, Hupeh Province. March 26, 1917.) *Chieh tzŭ*. A mustard said to be cultivated in the mountains of Szechwan, possibly as a summer crop, but perhaps also as a winter crop. See notes under No. 2393a [S. P. I. No. 45263] for suggestions.”

45311. *CITRUS* sp. Rutaceæ.

“(Ichang, Hupeh Province. March 22, 1917.) *P'ing t'ou kan* (flat-head mandarin). A peculiar variety of mandarin orange, of dark orange color and medium size, with heavy, loose, warty, and corrugated rind. Segments closely adhering to each other. Bitter-sweet taste; of tonic properties apparently. Some specimens contain far more seeds than others. Said to grow around Itu, on the Yangtze River, south of Ichang.”

45312. *CITRUS* sp. Rutaceæ.

“(Ichang, Hupeh Province. March 27, 1917.) *P'ao kan* (spongy mandarin). A large variety of mandarin orange, often over 4 inches in diameter; skin of bright orange color, somewhat wrinkled, but not very rough. Segments small, easily separated; seeds large and many. Taste sour and bitter. The fruits keep a very long time and are used as ornaments in rooms; the heavy rind is used in flavoring spirits. Said to be grown around Peisha, southwest of Ichang, and is considered one of the hardiest of all local varieties.”

45313 and 45314. *CITRUS GRANDIS* (L.) Osbeck. Rutaceæ. Pummelo.
(*C. decumana* Murray.)

45313. “(Ichang, Hupeh Province. March 27, 1917.) A large pummelo of somewhat conical shape.”

45314. “(Ichang, Hupeh Province. March 27, 1917.) A pummelo of medium size; shape flattened, flesh juicy, sweet, and of good flavor; contains few seeds.”

45315. *CITRUS* sp. Rutaceæ.

“(Ichang, Hupeh Province. March 21, 1917.) *Shih t'ou kan* (lion's head mandarin) or *Nai t'ou kan* (nipple-head mandarin). A large and heavy mandarin orange, of round-oblong shape, often with a neck close to the peduncle. Skin very warty and rough, deep orange in color; it separates very easily from the segments, which are also easily separated; seeds large, not many. Taste bitter and sour; used only medicinally by the Chinese. Said to be cultivated around Yitoo (or Itu) on the Yangtze River. About 40 different varieties of citrus fruits are said to be in cultivation in the region around Ichang; many of these are quite local products, and it seems that extensive hybridization has taken place between many species of citrus and crossing between various varieties.”

45316. *ORYZA SATIVA* L. Poaceæ.

Rice.

“(No. 2398a. Hankow, Hupeh Province. June 7, 1917.) *No mi ku* (sticky rice grain). A glutinous variety of rice, said to ripen early.

45263 to 45320—Continued.

It is much eaten boiled like dumplings, with sugar sprinkled over; also eaten with boiled jujubes. This is a good type of rice for making puddings. This sample is to be tested like Nos. 2396a and 2397a [S. P. I. Nos. 45266 and 45267]."

45317. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 2400a. Yuanan, Hupeh Province. April 3, 1917.) *Kao liang* (tall grains). The heads are used to make brooms. It is grown but sparsely, here and there, in western Hupeh. It should be tested in a region with warm, moist summers."

45318. *PHASEOLUS AUREUS* Roxb. Fabaceæ.

Mung bean.

"(No. 2432a. Ichang, Hupeh Province. March, 19, 1917.) Mixed strains of mung beans, grown mostly in Hupeh Province for bean-sprout production.

"In the future, bean sprouts may be much more widely eaten than they now are. In very cold and bleak regions, such as Labrador, northern Canada, northern Siberia, etc., and on sailing vessels a long time away from ports, bean sprouts from adsuki, mung, and small soy beans, together with seedlings of cress, mustard, and amaranth, are about the only fresh vegetables that can be raised. A dark, moist and warm place, like the inside of a cupboard, box, large jar, tin, etc., kept near a source of continuous, gentle heat, is necessary."

45319 and 45320. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

45319. "(No. 2445a. Hankow, Hupeh Province. June and July, 1917.) Mixed types of Chinese peaches to be tested by specialists."

45320. "(Feicheng, Shantung Province. February 27, 1917.) Stones of various varieties for specialists."

45321 and 45322.

From Manchester, England. Seeds presented by Mr. I. Henry Watson. Received October 11, 1917.

45321. *LAPEYROUSIA CRUENTA* (Lindl.) Benth. Iridaceæ.

African bulbs somewhat resembling freesias, though lapeyrousias will probably never have anything like the popularity enjoyed by freesias because of their later season of bloom and lack of fragrance. *Lapeyrousia cruenta* is probably the most popular kind, growing 6 to 10 inches high and blooming in summer and fall. The thin linear leaves, usually six, are erect from a basal tuft, 6 inches to a foot in length, and the bright carmine flowers with three darker spots at the base of the three smaller segments are an inch across. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1821, and *Thiselton-Dyer, Flora Capensis*, vol. 6, p. 96.)

45322. *LILIUM RUBELLUM* Baker. Liliaceæ.

Lily.

This fine Japanese lily is nearest to *Lilium japonicum* (*L. krameri*), from which it differs by its broad speciosumlike leaves and its smaller pink flowers with obtuse segments. The bulb is quite similar to that of *L. japonicum*, but more oval in shape; the stem is 1 to 2 feet high, smooth, green, spotted and tinged with purple, and the lower part is

45321 and 45322—Continued.

bare. The leaves, usually 15 to 20, are 4 to 5 inches long and from three-fourths of an inch to an inch wide. The flowers are 3 to 4 inches long and as wide, fragrant, and of the same color variations as *L. japonicum*, with yellow or orange anthers. It blooms in June and early July. It possesses a better constitution than does *L. japonicum*, being rather more robust and permanent. (Adapted from *Gardeners' Chronicle*, May 21, 1898, p. 321, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 4, p. 1869.)

45323 to 45325. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From Urumiah, Persia. Presented by Mr. Edward C. M. Richards. Received October 17, 1917. Quoted notes by Mr. Richards.

"Wheats from near the village of Bend, southwest of Urumiah."

45323. "Wheat from irrigated land."

45324. "'Dame,' or unirrigated wheat."

45325. "'Dame,' or unirrigated wheat."

45326. GOSSYPIMUM OBTUSIFOLIUM Roxb. Malvaceæ. Cotton.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received October 22, 1917.

"A variety cultivated by the natives of the oases of the Sahara Desert." (*Trabut.*)

45327. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

From Brisbane, Australia. Presented by Mr. L. G. Corrie. Received October 6, 1917.

Seeds sent in for stock purposes.

45328. CLAUCENA LANSIUM (Lour.) Skeels. Rutaceæ. Wampi.
(*C. wampi* Oliver.)

From Yeungkong, Canton, Kwangtung Province, China. Presented by W. H. Dobson, M. D., The Forman Memorial Hospital. Received October 29, 1917.

"Seeds from the largest *Wong pi* I have ever seen. The *Wong pi* is a grapelike fruit with large green seeds and evergreen leaves." (*Dobson.*)

A low spineless tree with spreading branches, spirally arranged evergreen pinnate leaves, and 4 to 5 parted small white flowers in large terminal panicles. Fruit ovoid-globose, about 1 inch long; skin glandular, pubescent; seeds green. The wampi is a native of South China, where it is commonly grown for its fruits. It is cultivated to some extent in Hawaii and California. It can be grafted on grapefruit and other species of Citrus, which makes it desirable to test it as a stock for common citrus fruits. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 786.)

For an illustration of a fruiting branch of the wampi, see Plate I.



A FRUITING BRANCH OF THE WAMPI (*CLAUCENA LANSIUM* (LOUR.) SKEELS,
S. P. I. NO. 45328).

The wampi fruit is a great favorite with the Chinese, but is little known in America. It has a tart flavor a little like that of the gooseberry, but is closely allied to the citrus fruits and can be grafted on grape fruit and other citrus species. It would be desirable to give it a test as a stock for these fruits. (Photographed by Wilson Popenoe, Santa Barbara, Calif., October 30, 1914; P16224FS.)



AN INDIAN BOY HOLDING A CLUSTER OF WILD TROPICAL GRAPES (*VITIS*
TILIAEFOLIA HUMB. AND BONPL., S. P. I. No. 45361).

The problem of producing a table grape which will grow and fruit well in the Tropics is probably one of plant breeding. The existence of this strictly tropical species of *Vitis*, which bears clusters of fruit of fair size and quality, should encourage the plant breeders to hybridize it with the larger fruited cultivated grape. The photograph is of a cluster from a vine found near Vera Cruz, Mexico, but the inventory description is of a form which, according to Wilson Popenoe, is very juicy, very sour, and contains only two seeds. It bears heavily and the fruits are of fairly good size and only need to be sweetened to be fit for table use. (Photographed by Wilson Popenoe, Puerto Mexico, Vera Cruz, June 15, 1918; P17494FS.)

45329. \times CASTANEA NEGLECTA Dode. Fagaceæ.**Hybrid chestnut.**

From Madison County, Va. Presented by Mr. Daniel Grinnan, Richmond.
Received October 29, 1917.

"One of these hybrids (*Castanea pumila* \times *dentata*) was discovered some 40 years ago in Madison County, Va., on the Rapidan River. It was preserved and now stands in a pasture. The tree is quite large and vigorous, about 40 or 50 feet high, and nearly 2 feet in diameter near the ground. It bears a large crop of nuts like the chinquapin, but somewhat larger." (*Grinnan.*)

45330 to 45342. CASTANEA spp.

From Bell, Md. Seeds presented by Dr. W. Van Fleet. Received October 29, 1917. Quoted notes by Dr. Van Fleet, unless otherwise indicated.

45330 to 45337. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ. Chestnut.

45330. No. 1. "Cross within species. Third generation of variety selection. From Arlington Farm, Va."

45331. No. 12. "Cross within species. Third generation of variety selection. From Arlington Farm, Va. Same as S. P. I. No. 45330, but from a different tree."

45332. No. 1-a. "Fourth generation. Mixed lots of seed too small to be separated. Grown at Bell, Md."

45333. No. 1-d. "Mixed stock from Arlington Farm, Va. Variable in size."

45334. Bell No. 1. "Fourth generation by straight selection. Started by a variety cross between two early prolific types of *Castanea crenata*. A very large nut, with good cooking qualities, but poor eating qualities when raw. The tree has a good habit; the trunk is clean and bright, with thin handsome branches and very narrow leaves."

45335. Bell No. 2. "Fourth generation by selection. Tree about 7 feet high, with clean limbs. It is a prolific bearer. The fruit is very large and is good for cooking, but not for eating when raw. It is more bitter than S. P. I. No. 45334."

45336. Bell No. 3. "Fourth generation. Much like S. P. I. No. 45335."

45337. Bell No. 4. "Fourth generation by selection. The trees have very much the same habit as S. P. I. Nos. 45334 to 45336, and the nuts are about the same size—very large. The nuts have good eating qualities and are better than those of the numbers referred to above."

45338. CASTANEA MOLLISSIMA Blume. Fagaceæ.

Chestnut.

This is the common chestnut of China. It is distributed from the neighborhood of Peking in the northeast to the extreme limits of Szechwan and Yunnan in the west and southwest. Near villages and towns, where the woody vegetation is continually cut down to furnish fuel, this chestnut is met with as a bush or a low scrub; but in the thinly populated areas it is a tree from 15 to 20 meters tall, with a trunk from 1.5 to 2 meters in girth. The nuts are a valued article of food. The Chinese name for this chestnut is Pan-li. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 194.)

45330 to 45342—Continued.

45339 to 45342. *CASTANEA PUMILA* × *CRENATA*. Fagaceæ.

Hybrid chestnut.

45339. No. 1-b. "Mixed lot of seed for stocks. Grown at Bell, Md."

45340. Bell No. 5. "A very attractive nut of fair quality, which looks as though it would be a good commercial nut."

45341. Bell No. 8. "Second generation. A very prolific tree, yielding from 3 to 4 pounds of nuts this season. The tree is about 7 feet high. The nuts are of very good flavor and of good size for chinquapin, but small for chestnut."

45342. Arlington No. 6. "Second generation. Part of a lot of 15 pounds of seed grown at Arlington Farm, Va. The nuts are 1 inch in diameter and are of good quality."

45343 to 45345.

From Kingaroy, Queensland. Seeds presented by Mrs. R. A. Pearse through Mr. Dudley Harmon, Washington, D. C. Received October 30, 1917.

"I am sending several packages of seeds, some of which you may already have but you may get different results from these, since they are acclimatized to Queensland." (Pearse.)

45343. *CUCUMIS SATIVUS* L. Cucurbitaceæ.

Cucumber.

"Mammoth."

45344. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

"Zebra Runner."

45345. *VIGNA SESQUIPEDALIS* (L.) Fruwirth. Fabaceæ. Yard Long bean.

"Snake bean."

45346. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From Honolulu, Hawaii. Presented by the Hawaii Agricultural Experiment Station. Received October 29, 1917.

Selected seeds sent in for breeding work.

45347. *CORYLUS COLURNA* L. Betulaceæ.

Hazelnut.

From Rochester, N. Y. Presented by Mr. John Dunbar, Superintendent of Parks, through Mr. C. A. Reed, of the Bureau of Plant Industry. Received October 30, 1917.

"The plants from which these nuts were obtained came from L. Späth, Berlin, Germany, 25 years ago. They began to bear fruit about 6 years ago. The trees are now about 25 feet tall. It took these nuts 2 years to germinate." (Dunbar.)

The tree is well worth growing for its stately form, so remarkable for a hazel, and for its curiously enveloped nuts. Native of southeastern Europe and Asia Minor; introduced to England about the middle of the seventeenth century. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 402.)

45348. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Johannesburg, Union of South Africa. Presented by the Agricultural Supply Association, Ltd., through Mr. J. Burt Davy, botanist. Received November 1, 1917.

"Kafir corn grown by the natives in the Vereeniging district of the Transvaal, and claimed by them to be earlier in maturing than any other sorts grown in the neighborhood. This strain may prove of immense value in areas having a short growing season. The rainfall at Vereeniging averages about 27 inches and comes almost entirely in the summer." (*Davy.*)

45349 to 45357.

From Guatemala. Collected by Mr. Wilson Jopenoe, Agricultural Explorer for the Department of Agriculture. Received November 6, 1917. Quoted notes by Mr. Popenoe.

45349. CHAMAEDOREA sp. Phœnicaceæ.**Pacayito.**

"(No. 174a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the *pacayito*, of which plants have been sent in under No. 174 [S. P. I. No. 44994]. These seeds are from the garden of Doña Ines Dieseldorff, in Coban, and are from the taller, more slender, and more graceful of the two probable species included under No. 174 [S. P. I. No. 44994]."

45350. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote.***(Sechium edule Swartz.)*

"(No. 181a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a rather small variety but little larger than a hen's egg. It is a waxy white in color, oval or subpyriform in shape, spineless, and considered by the Guatemalans a very choice vegetable.

"This variety of güisquil or chayote from San Cristobal Vera Paz is known as *perulero*, or as *chima* in the Kekchi dialect, which is that spoken in the Alta Vera Paz region."

See notes under S. P. I. Nos. 43393 to 43401 for further data in regard to the various forms of chayotes found in Guatemala.

45351. INGA sp. Mimosaceæ.

"(No. 183a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) *Cojiniquil*. Seeds of an indigenous species of Inga common along watercourses in Alta Vera Paz and also planted for shade in coffee plantations. The tree is medium sized, reaching about 40 feet in height, with a broad, open crown and scant foliage. The leaves are large, compound, with three to four pairs of leaflets. The fruits, which are produced in abundance during September and October, are slender pods about 6 inches in length. They contain 6 to 10 irregularly oblong, dark-green seeds, each surrounded by white, jellylike pulp of sweet, aromatic flavor, strikingly suggestive of the lychee (*Litchi chinensis*). While the quantity of pulp is not great, the flavor is really excellent, and the fruit seems to be popular among the inhabitants of the region.

"Though it is not anticipated that this fruit will become of commercial importance in the United States, the species is well worthy of trial by plant fanciers in Florida for the interest which it possesses."

45349 to 45357—Continued.

45352. *JUGLANS MOLLIS* Engelm. Juglandaceæ.

Walnut.

"(No. 180a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the wild walnut of the Vera Paz region. It is not a common tree, but it is seen occasionally on mountain sides and along watercourses at altitudes of 1,500 to 4,500 feet. So far as my own observations go, the tree is only moderately large, rarely reaching a greater height than 40 to 45 feet. The nuts, which are sometimes produced very abundantly, are as large as a good specimen of *Juglans nigra*, but have a thicker shell and consequently less kernel.

"This species is of interest in connection with the attempt now being made to obtain good nut-bearing trees for the Tropics. It should be planted in such regions as southern Florida and Cuba. Since it appears to thrive in Guatemala under a rather wide range of climatic conditions, it may succeed in many parts of the Tropics and Subtropics."

45353. *LOBELIA FULGENS* Willd. Campanulaceæ.

"(No. 186a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a handsome herbaceous plant commonly found along roadsides and in meadows of the region between Tactic and San Cristobal Vera Paz. It resembles the larkspur in habit, sending up a single stalk to the height of 2 or 3 feet, and producing toward the summit numerous bright scarlet-crimson flowers. These appear to be tubular at first glance, but are split along the upper surface and deeply five lobed at the mouth; three of the lobes extend downward and the remaining two upward. As the lower flowers wither and turn brown, new ones are produced at the apex of the stalk; the plant thus remains in bloom for a long period.

"The stalk and leaves are softly pubescent or pilose; the leaves are linear-lanceolate in outline, 4 to 6 inches long, one-half to three-quarters of an inch broad, entire or finely and irregularly serrate, adnate to the stem, with the margins extending down the stem some distance in the form of two prominent ridges."

45354. *PERSEA SCHIEDEANA* Nees. Lauraceæ.

Coyó.

"(No. 179a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of the coyó from San Cristobal Vera Paz and Tactic, both in the Department of Alta Vera Paz.

"These were taken mainly from fruits of inferior quality and are intended to serve for the production of seedling plants on which to bud or graft superior varieties of the coyó.

"Among the hundreds of coyó trees which are found throughout the Vera Paz region, an exceedingly small number produce fruits of excellent quality. Up to the present time I have found only two which seem worthy of vegetative propagation. The vast majority of trees produce small, often malformed fruits, with a large seed and fibrous flesh of poor quality and unattractive color. The best varieties, however, such as that found in the property of Padre Rivera, of Tactic, are as large as a good avocado of the West Indian race. The seed is no larger in proportion than the seed of a good budded avocado, and the flesh is creamy white, free from fiber, and of a very rich nutty flavor. If a variety like this can be established in the United States, it seems reasonable to believe that it will become popular. The fruit so strongly resembles an avocado

45349 to 45357—Continued.

in general appearance that it would not be taken by one unfamiliar with avocados for a distinct species, but the flavor is so distinct that the difference can be recognized at once.

"In general, the coyó does not seem to be nearly so productive as the avocado. Occasionally trees bear heavily, but most of them do not produce good crops. The season of ripening is much shorter than with the avocado; mature fruits will rarely hang on the tree more than six weeks, while avocados often remain three or four months. When picked and laid away to ripen, the coyó requires only three or four days to soften, while the avocado sometimes takes eight or nine days. Among the Indians of the Vera Paz region the coyó seems to be preferred to the avocado."

45355. *PIMENTA* sp. Myrtaceæ.

"(No. 185a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) A small tree grown in the gardens of San Cristobal Vera Paz for its aromatic seeds, which are known as *pimienta* and are much used by the natives for seasoning. This is possibly the common allspice, *Pimenta officinalis*; but on the chance that it may be a different species a few seeds have been obtained."

45356. *RUBUS URTICAEFOLIUS* Poir. Rosaceæ.

"(No. 186a.) Seeds of a very interesting species of *Rubus*, which I have seen only in the Vera Paz region. It is common about Purula, Tactic, and San Cristobal, and I have seen it as far east as Sepacuite. It occurs at altitudes of approximately 3,000 to 6,000 feet. There is another wild *Rubus* in this region which is more common, but its fruits are much more seedy and of acid flavor.

"This plant sends up strong, rather stiff canes, sometimes 10 or 15 feet in length. They are covered abundantly with reddish spines, the young branchlets appearing coarsely hairy. The leaves are trifoliate (distinguishable by this means from the other species, whose leaves are composed of five leaflets) and velvety in texture. The leaflets are ovate acuminate, about 3 inches long, and finely serrate.

"The flowers, which are rather small, are produced in large terminal racemes. The fruits are not as large as in many wild blackberries, being scarcely more than half an inch in length; but they are of delicious flavor, and the seeds are so soft that they are scarcely felt in the mouth. In this latter respect the species is a marked contrast to the others seen in Guatemala, the seeds of wild blackberries being usually very large and hard.

"The plant bears abundantly, and the sweetness of the fruits makes them very desirable for eating in the fresh state. This *Rubus* can be strongly recommended for trial in the southern United States."

45357. *SOBRALIA* sp. Orchidaceæ.

"(No. 187. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Plants of a handsome terrestrial orchid found on rocky banks in the vicinity of Tucuru, Alta Vera Paz. It grows about 3 feet in height, and produces at the apex of each stalk a handsome lilac-purple flower, 2 to 3 inches in diameter. Should be tried in southern Florida."

45358 and 45359. CASTANEA ALNIFOLIA Nutt. Fagaceæ.

From Gainesville, Fla. Plants and scions collected by Mr. J. E. Morrow at the Agricultural College. Received December 10, 1917.

A low shrub, up to 2 feet in height, and forming wide patches by means of the underground stems. The nut is solitary and very small. (Adapted from *Small, Flora of the Southeastern States*, p. 347.)

To be grown for experimental purposes.

45358. An erect form.

45359. A prostrate form.

45360 and 45361.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 6, 1917. Quoted notes by Mr. Popenoe.

45360. POGONOPUS SPECIOSUS (Jacq.) Schum. Rubiaceæ.

"(No. 191. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Cuttings of a handsome flowering shrub from the valley of the Rio Polochic, near Tucuru, Alta Vera Paz. The brilliant scarlet bracts make the plant a striking object among the vegetation along the slopes of the valley, suggesting the poinsettia in color. The plant is bushy in habit, reaching 15 feet in height, the leaves broadly lanceolate, acuminate, 3 to 5 inches long, with margins entire. The flowers are tubular, about an inch long, produced in corymbs 2 to 4 inches broad. Many of the flowers are subtended by ovate, acute bracts, 1 inch to 1½ inches in length, and of brilliant crimson-scarlet color. This species should be tested as an ornamental shrub in Florida and California."

45361. VITIS TILIAEFOLIA Humb. and Bonpl. Vitaceæ.

Grape.

(*V. caribaea* DC.)

"(No. 182a. Finca Chejel, Baja Vera Paz, Guatemala. October 15, 1917.) Seeds of a wild grape from the vicinity of San Cristobal Vera Paz, where it is known simply as *uva silvestre* (wild grape). Numerous inquiries have failed to bring to light any Indian name for it.

"This seems to be a different form from that sent in under S. P. I. No. 44060; at least, the fruits are much larger and of a different color.

"The plant makes slender growths, with forked tendrils and cordate subserrate leaves 3 to 4½ inches long by 3 to 3½ inches broad. The racemes are 2 to 3 inches long, and compact; the berries are three-eighths of an inch in diameter, dull or rather pale purplish maroon in color, with abundant, very acid juice and only one or two seeds. The fruits seem to be little used in the Vera Paz region as they are too sour to eat out of hand, and the Indians are not accustomed to make jelly or other products of similar nature.

"This grape impresses me as the best which I have seen in the Tropics, and its use in connection with the development of a really choice grape for tropical regions suggests itself. It bears heavily, and the fruits are of fairly good size. They need only to be made sweeter to be of value for table use."

For an illustration showing a cluster of these grapes, see Plate II.

45362 'to 45364.

From Puerto Bertoni, Paraguay. Seeds presented by Dr. Moises Bertoni. Received October 15, 1917.

45362. *CYPHOMANDRA* sp. Solanaceæ.

Tree-tomato.

"*Aguará-ihvá*. July, 1917. A perennial shrub, up to 50 cm. high, with large leaves and large, edible, depressed-globular fruits. Found on the plains or savannahs in this vicinity, at altitudes of 170 to 270 meters." (*Bertoni*.)

45363. *SOLANUM CHACOENSE* Bitter. Solanaceæ.

Potato.

"Collected July 25, 1917. A tuberous species found in stony and sandy places at the edge of woods." (*Bertoni*.)

It is related to *Solanum tuberosum* and its varieties, but is distinguished from them by having the calyx divided up to one-third of the length. The tubers are globose or subglobose, three-fifths of an inch in diameter, with thin yellowish skin. (Adapted from *Bitter*, in *Fedde Repertorium*, vol. 9, p. 115, 1911.)

45364. *SOLANUM VIOLAEFOLIUM* Schott. Solanaceæ.

"August, 1917. When fully ripe the fruit is edible and of excellent flavor. Found in partly shady places at altitudes of 170 to 230 meters. Used as a cover crop between coffee trees, etc." (*Bertoni*.)

45365. *RUBUS GLAUCUS* Benth. Rosaceæ.

Andes berry.

From Manizales, Colombia. Seeds presented by Mr. M. T. Dawe. Received October 20, 1917.

"The Andes berry is found in the highlands of tropical America from southern Mexico to Ecuador and Peru. In character of growth and foliage it is an extremely vigorous raspberry, but in fruit it more closely resembles a blackberry, since it does not 'pull off' or come away from the receptacle when ripe. The plant grows to 15 feet in height, with slender, half-trailing canes; the berries are oblong to heart-shaped, an inch long, dark maroon, soft and juicy, with small soft seeds. In flavor they resemble our loganberry, but they are somewhat sweeter and better. The plant should be tested throughout the southern and western United States." (*Wilson Popenoe*.)

45366 to 45447.

From Pretoria, Transvaal, Union of South Africa. Seeds presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received October 15, 1917. Quoted notes by Mr. Evans.

45366. *HORDEUM INTERMEDIUM CORNUTUM* (Schrad.) Harlan. Poaceæ.

Barley.

"No. 18. A rust-resistant barley from Fauresmith, one of the important wheat-growing areas in the Orange Free State."

45367. *SECALE CEREALE* L. Poaceæ.

Rye.

"Rust-resistant rye-wheat from one of the most important wheat-growing areas in the Orange Free State."

45366 to 45447—Continued.

45368 to 45440. *TRITICUM AESTIVUM* L. Poaceæ.
(*T. vulgare* Vill.)

Wheat.

Varieties of rust-resistant wheat which came chiefly from the most important wheat-growing areas in the Orange Free State.

45368. "No. 1. *Early Beard*, from Edenburg, Orange Free State."
 45369. "No. 3. *Du Toit's* wheat, from Klipfontein, P. O. Austens Poort."
 45370. "No. 4. *Australian* wheat."
 45371. "No. 5. *Klein root koren*."
 45372. "No. 6. *Defiance*, from Edenburg, Orange Free State."
 45373. "No. 7. *Beard* wheat, from 'Melkbosch,' Bethulie District."
 45374. "No. 8. *Red Egyptian*, known also as '*Stromberg rooi koren*,' from Lifton."
 45375. "No. 9. *Transvaal wolhaar*, from Tagelberg, Bethulie District."
 45376. "No. 10. *Talawair*, from Klein Zuurfontein."
 45377. "No. 11. *Cilliers* wheat, from Hammonia, Orange Free State."
 45378. "No. 12. *Wit baard koren*, from Hammonia, Orange Free State."
 45379. "No. 13. Unnamed variety, from Zastron."
 45380. "No. 14. *Colony Red* wheat, from Fauresmith."
 45381. "No. 15. *Ou baard*, late, from Klein Zuurfontein."
 45382. "No. 16. *Gluyas*, early, from Mr. F. Jooste, Rietfontein, Edenburg."
 45383. "No. 17. *Rooi kaal koren*, from Teurfontein, Fauresmith."
 45384. "No. 19. *Sibies koren*, from Fauresmith."
 45385. "No. 20. *Klein koren*, from Bethulie District."
 45386. "No. 21. *Wolhuter* wheat."
 45387. "No. 23. *Early Beard*, from Mr. F. Jooste, Rietfontein, Edenburg."
 45388. "No. 24. *Early Beard*, from Mr. F. Jooste, Rietfontein, Edenburg."
 45389. "No. 25. *Defiance*."
 45390. "No. 26. Unnamed variety, from Koffyfontein."
 45391. "No. 27. *Stromberg rooi*, from Mr. A. G. W. van der Merwe, Tagelberg, Bethulie District."
 45392. "No. 28. Unnamed variety, from Mr. J. L. Combrink, Springbokflats, Bethulie District."
 45393. "No. 29. *Early Beard*, from Mr. A. J. Grisel, Kleinzuurfontein."
 45394. "No. 30. Unnamed variety, from Mr. P. Richie."
 45395. "No. 31. *Early Beard*, from Mr. G. J. Saaiman, 'Schuins-hoogte,' Bloemfontein."
 45396. "No. 32. *Transvaal rooi wolhaar*, from Mr. P. D. Jacobs, 'Koksfontein,' Fauresmith."

45366 to 45447—Continued.

45397. "No. 33. Unnamed variety, from Koffyfontein."
45398. "No. 34. *Transvaal wolhaar*, from Messrs. de Villiers & Adams, Belgium Farm, Bethulie District."
45399. "No. 35. *Transvaal wolhaar*, from Glass Bros., Lifton."
45400. "No. 36. *Early Beard*, from Fauresmith."
45401. "No. 37. Unnamed variety, from Mr. T. J. van der Merwe, Maritzburg."
45402. "No. 38. *Early Beard*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45403. "No. 39. *Red Egyptian*, from Messrs. de Villiers & Adams, Bethulie District."
45404. "No. 42. *Transvaal wolhaar*, from Mr. F. J. de Jonge, Zastron."
45405. "No. 43. *Early Beard*, from Mr. F. J. de Jonge, Zastron."
45406. "No. 44. *Ou baard*, from Fauresmith."
45407. "No. 45. Unnamed variety, from Fauresmith."
45408. "No. 46. *Early Gluyas*, from Fauresmith."
45409. "No. 47. Unnamed variety, from Fauresmith."
45410. "No. 48. Unnamed variety."
45411. "No. 49. Unnamed variety, from Holland, Posthumus."
45412. "No. 50. Unnamed variety."
45413. "No. 52. Unnamed variety."
45414. "No. 53. Unnamed variety."
45415. "No. 54. *Red Egyptian*, from Mr. Ferdinand Wande, Hammonia, Orange Free State."
45416. "No. 55. Unnamed variety."
45417. "No. 56. Unnamed variety."
45418. "No. 57. Unnamed variety."
45419. "No. 58. Unnamed variety."
45420. "No. 59. *Rooi wolhaar*, from Posthumus."
45421. "No. 60. *Ekstein* wheat, from Holland, Posthumus."
45422. "No. 61. Spring wheat, from Holland, Posthumus."
45423. "No. 62. *Bob's* wheat, from Mr. H. Stubbs, Corunna."
45424. "No. 63. *White Australian*, from Mr. H. Stubbs, Corunna."
45425. "No. 64. Unnamed variety."
45426. "No. 66. *Ijzerrark*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45427. "No. 67. *Delaware*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45428. "No. 68. *Early Beard*, from Mr. H. J. Joubert, Middelfontein, Bethulie District."
45429. "No. 69. *Primrose* wheat, from Burghersdorp."
45430. "No. 70. Early spring wheat, from Burghersdorp."
45431. "No. 71. *Bosjesveld* wheat, from Burghersdorp."
45432. "No. 73. *Early Gluyas*, from Burghersdorp."

45366 to 45447—Continued.

45433. "No. 75. *Transvaal wolhaar*, from Mr. Andries L. Lombard, Grootfontein, P. O. Dewetsdorp."
45434. "No. 76. *Transvaal wolhaar*, from Mr. G. van Tonder, waterworks, Bloemfontein."
45435. "No. 77. *Wol koren*, grown without water; from Mr. J. J. Badenhorst, Verliespan, P. O. Dewetsdorp."
45436. "No. 78. *Geluks koren*, grown without water; from Mr. M. L. Badenhorst, Klipfontein, Dewetsdorp."
45437. "No. 79. *Baard koren*, grown without water; from Mr. J. J. Badenhorst, Verliespan, P. O. Dewetsdorp."
45438. "No. 80. Early wheat, from Mr. A. L. Lombard, Grootfontein, P. O. Dewetsdorp."
45439. "No. 82. Early rust-proof wheat, from Mr. A. D. J. Taylor, 'Killarney,' Harrismith District."
45440. "No. 83. *Malan's*, a spring wheat grown in black soil; from Mr. C. J. Pieters, 'Nox,' Harrismith District."
- 45441 to 45446. *TRITICUM DURUM* Desf. Poaceæ. **Durum wheat.**
 "Varieties of rust-resistant wheats which came chiefly from the most important wheat-growing areas in the Orange Free State."
45441. "No. 2. *Blue Beard* from Klipfontein, P. O. Austens Poort."
45442. "No. 40. Unnamed variety, from Mr. D. J. C. van Niekerk, Davidsrust, Jacobsdal."
45443. "No. 41. Unnamed variety, from Mr. W. J. Lubbe, Ramsdam, Honey Nest Kloof."
45444. "No. 65. *Bengal* wheat or *Zwaart baard*, from Mr. P. van Aardt, Broekpoort."
45445. "No. 72. *Media* wheat, from Burghersdorp."
45446. "No. 74. *Golden Ball* wheat, from Mr. W. H. Webster, Vall bank, P. O. Dewetsdorp."

45447. *TRITICUM TURGIDUM* L. Poaceæ. **Poulard wheat.**

"No. 81. *Louren's* wheat, sown in March, 1915, reaped in January, 1916. From Mr. P. J. Moolman, Beulah, Harrismith District. A rust-resistant wheat which came from one of the most important wheat-growing areas in the Orange Free State."

45448. *CUDRANIA TRICUSPIDATA* (Carr.) Bureau. Moraceæ.
 (*C. triloba* Hance.)

From Augusta, Ga. Seeds presented by the P. J. Berckmans Company
 Received October 24, 1917.

"This tree is very easily propagated from suckers. The tree that we have in our nursery is about 12 feet high and about 6 feet broad. It would have been considerably larger than this but for the fact that some four years ago we headed it back to about 3½ feet from the ground. This tree had at least 1½ bushels of fruit which matured from the middle of August up to November. It is most prolific, the fruits on this one tree running up into the thousands. (*Berckmans.*)

The fruit much resembles in appearance a dense cluster of very large raspberries of the strigosus type, and when fully ripe has much the flavor of

an overripe red raspberry. It has possibilities for jelly making. The numerous seeds are large, but, as considerable variation has been noted in their size, selection may ultimately reduce them sufficiently to make the fruit a popular one.

45449 to 45476.

From Soochow, China. Seeds presented by Prof. H. Gist Gee, of the Soochow University, through Dr. Yamei Kin. Received October 27, 1917. Quoted notes by Prof. Gee.

45449. *BENINCASA HISPIDA* (Thunb.) Cogn. Cucurbitaceæ. Wax gourd.
(*Benincasa cerifera* Savi.)

"*Tung kua* (tree melon)."

45450 and 45451. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

45450. "*Hsüeh jang hsi kua* (snow-flesh watermelon)."

45451. "*Hei p'i hsi kua* (black-skin watermelon)."

45452. *COIX LACRYMA-JOBI* MA-YUEN (Roi.) Stapf. Poaceæ. Ma-yuen.
"*Hui jên*."

45453 and 45454. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

45453. "*Sheng kua* (fresh or raw melon)."

45454. "*Niu chiao kua* (ox-horn melon)."

45455. *FAGOPYRUM VULGARE* Hill. Polygonaceæ. Buckwheat.
(*F. esculentum* Moench.)

"*Ch'iao mai*."

45456 to 45458. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

45456. "*T'ang hsin lu chi*." 45458. "*Kao liang lu chi*."

45457. "*Kao liang*."

45459 to 45461. *HORDEUM VULGARE COELESTE* L. Poaceæ. Barley.

45459. "*Hei liu shih lai mai* (black upland seasonal wheat)."

45460. "*Pai liu shih lai mai* (white upland seasonal wheat)."

45461. "*Sang chên hung lai mai* (mulberry-red wheat)."

45462 and 45463. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

45462. "*Tsao ta mai* (early barley)."

45463. "*Ju ku ch'ing ta mai* (mushroom blue barley)."

45464 to 45466. *ORYZA SATIVA* L. Poaceæ. Rice.

45464. "*Yu mâng pai han tao* (awned white upland rice)."

45465. "*Wu mâng hung han tao* (awnless red upland rice)."

45466. "*Wu mâng pai han tao* (awnless white upland rice)."

45467. *PANICUM MILIACEUM* L. Poaceæ. Proso.

"*Huang chi* (yellow millet)."

45468. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"*Hsiao han* (small, cold)."

45469. *RAPHANUS SATIVUS* L. Brassicaceæ. Radish.

"*Lo p'u*."

45449 to 45476—Continued.

45470. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(Glycine hispida Maxim.)

“Ya tou (soy beans for sprouts).”

45471. SPINACIA OLERACEA L. Chenopodiaceæ.

Spinach.

“Po ts'ai.”

45472 and 45473. TRITICUM AESTIVUM L. Poaceæ.

Wheat.

(T. vulgare Vill.)

45472. “Ssü shih t'ou wu mang hsiao mai (four-season head awnless wheat).”

45473. “Ssü shih t'ou yu mang hsiao mai (four-season head awned wheat).”

45474 to 45476. VICIA FABA L. Fabaceæ.

Broad bean.

45474. “Ta ch'ing ts'an tou (large green broad bean).”

45475. “Ch'ing ts'an tou (green broad bean).”

45476. “Hung ts'an tou (red broad bean).”

45477. BERBERIS WILSONAE × AGGREGATA. Berberidaceæ.

Barberry.

From Bell, Md. Cuttings presented by Dr. W. Van Fleet. Received October 29, 1917.

“Hybrids of *Berberis wilsonae* and *B. aggregata* grown from seeds secured by pollination under glass in May, 1914. Both species are late bloomers when grown outside. *Berberis aggregata*, the pollen parent, is an upright grower with larger foliage than *B. wilsonae* and with very short flower clusters. The hybrids, however, are even more spreading in growth than *B. wilsonae*, with very thick foliage that turns deep purple at the approach of frost and holds on until midwinter. All the hybrids are quite uniform in appearance and are very handsome and hardy. Flowers and fruits have not yet appeared on these seedlings.” (*Van Fleet*.)

45478. ARECA CATECHU L. Phœnicaceæ.

Betel-nut palm.

From Porto Rico. Seeds presented by the Agricultural Experiment Station, Mayaguez, Porto Rico. Received November 6, 1917.

This palm is grown very widely in the Tropics. When mature it forms a graceful tree 40 to 100 feet tall. The fibrous spathes and the covering of the fruits are used in packing. The seeds contain a dye and are the source of the betel nuts used so nearly universally in the East for chewing with lime and pepper leaves. In India alone, where 17 varieties are recognized, the trade in the nuts exceeds \$30,000,000 yearly. The cultivation of Areca is not difficult, and with a little care it can be grown in a greenhouse. The young plants are very decorative, and when old are probably the most graceful palms in cultivation. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 387.)

45479. INDIGOFERA sp. Fabaceæ.

From Costa Rica. Seeds presented by Mr. George T. Carter, of Paraiso, Costa Rica, through Mr. Benjamin F. Chase, American consul, San Jose. Received November 6, 1917.

This plant, *Pico de pajaro* (bird's beak), grows wild in Costa Rica. It is commonly found growing beneath the trees in orange groves, where it forms a

bush about 3 feet high, resembling our common locust in its foliage, but having no spines. The plants are cut away at each clearing of the ground about the orange trees, but soon grow again. This plant is said to be a good producer of the nitrogen-fixing bacteria; it is said that the roots show more nodules than either clover or bean roots. (Adapted from *report of Mr. Chase, October 19, 1917.*)

45480. ALEURITES TRISPERMA Blanco. Euphorbiaceæ.

Soft lumbang.

From the Philippine Islands. Seeds presented through Mr. Adn. Hernandez, Director of Agriculture, Manila. Received November 20, 1917.

"Soft lumbang is one of the Philippine names given to this species to distinguish it from the true lumbang, *Aleurites moluccana*. It is a strictly tropical species of very limited distribution and is reported to fruit rather irregularly. The shell of the seed is much thinner and more easily broken than that of *A. moluccana*, and the oil obtained from the kernel is said to be very similar in drying properties to that of *A. fordii*, the tung-oil tree of China." (R. A. Young.)

45481. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

From Japan. Seeds purchased from the Yokohama Nursery Co., Yokohama. Received November 22, 1917.

"*Kinukatsugi*. A Japanese taro of the dasheen type, producing a considerable number of small cormels, or tubers. It is considered by the Japanese to be one of their finest varieties. The cormels are similar in appearance to those of other Japanese taros tested in this country; but, though small, they are of better quality." (R. A. Young.)

45482 to 45485.

From Porto Murtinho, Matto Grosso, Brazil. Seeds presented by Mr. C. F. Mead. Received November 5, 1917.

45482. ARACHIS HYPOGAEA L. Fabaceæ.

Peanut.

"This peanut, in Guarani called *mandui guazu*, is planted by the Indians and is customarily eaten, shell and all, after boiling. Plenty of space (2 feet square) must be allowed each plant, and the main crop will come from branches, which should be covered up from the main plant to the end, leaving the tip of each branch uncovered." (Mead.)

45483. ACROCOMIA TOTAI Mart. Phœnicaceæ.

Palm

"This palm, *coco cordillero* (mountain coco), was found on hills between Sapucoy and Caballero, in Paraguay. The plant is small, rarely over 1 meter in height, with fruit clustered at the base." (Mead.)

45484. ATTALEA GUARANITICA Barb.-Rodr. Phœnicaceæ.

Palm.

"*Coco mbocaya*, the base stock for oil, is a very valuable crop even as harvested here, and I see no reason why it should not do well in your southern sections where citrus fruits thrive." (Mead.)

A palm, native to tropical South America, with large, pinnate leaves and with fruits that hang in large clusters; each nut consists of three cells and contains as many seeds, a circumstance which serves to distinguish the genus from all its allies. (Adapted from *Lindley, Treasury of Botany, pt. 1, p. 109.*)

45482 to 45485—Continued.

45485. *PTEROGYNE NITENS* Tulasne. Cæsalpiniaceæ.

"*Ybyrá-ró*. In many ways this timber is the most useful found hereabouts, especially for hulls of boats, coach work, etc. You have no timber at all like it." (*Mead.*)

A tall, stout, unarmed tree, abundant in parts of Argentina and Brazil. The wood is very strong and resistant and is used in the construction of carts, excepting the spokes. It is considered an excellent wood in Misiones, whence it is exported. It is also highly valued in Salta and is used in coach making. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina, p. 57.*)

45486 to 45489.

From Sao Paulo, Brazil. Seeds presented by Comte Amadeu A. Barbiellini. Received November 8, 1917.

45486. *ANNONA* sp. Annonaceæ.

Sent in as *Araticum ponhé* (*Annona marcgravii*), but it does not agree with other material of this number already received. It is to be grown for identification.

45487. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

A Brazilian horticultural variety of cherimoya.

45488. *STREPTOCHAETA SPICATA* Schrad. Poaceæ.

Grass.

A very rare South American grass, the morphology of which is not well understood. It is to be grown for the studies of the Department agrostologists.

45489. *ZORNIA DIPHYLLA GRACILIS* (DC.) Benth. Fabaceæ.

A tufted annual with wiry stems, lanceolate leaflets dotted with black glands, 3 to 12 flowered racemes 1 to 3 inches long, and pods with two to six densely prickly joints. It is stacked by the Foulahs for horse provender. The variety *gracilis* is a slender form of this species. Native to tropical America and Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 15, pt. 2, p. 83*, and from *Lindley, Treasury of Botany, pt. 2, p. 1352.*)

45490 to 45499.

From Montevideo, Uruguay. Seeds presented by Señor Ricardo Salgueiro Silveira, for the secretary of the Association of Agriculturists. Received November 9, 1917.

45490. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

"*Maní Brasileira*." Said to be excellent varieties, acclimated in Uruguay.

45491. *AVENA SATIVA* L. Poaceæ.

Oats.

"1888." Reported as a superior variety.

45492. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

"1551." Said to give excellent yields.

45493. *LINUM USITATISSIMUM* L. Linaceæ.

Flax.

"1961." Said to be a superior form under Uruguayan conditions.

45494 and 45495. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

Two lots sent in as Argentine and Peruvian strains, but not distinguished in any way.

45494. Alfalfa "1697."

45495. Alfalfa "1994."

45490 to 45499—Continued.

45496. PHALARIS CANARIENSIS L. Poaceæ. Canary grass.

Said to be a heavy-yielding variety.

45497. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

Reported to be an excellent variety as grown in Uruguay.

45498 and 45499. ZEA MAYS L. Poaceæ. Corn.

Two lots of corn received as common maize and Cuarenteno maize, but not distinguished in any way.

45498. Corn "1898."

45499. Corn "1645."

45500. JUNIPERUS CEDRUS Webb. Pinaceæ. Juniper.

From Teneriffe, Canary Islands. Seeds presented by Dr. George V. Perez, Santa Ursula, through the Forest Service, United States Department of Agriculture. Received February 2, 1917.

"No. 1. From Palma, one of the Canary Island group." (*Perez.*)

"It is native to the Canary Islands, where it ascends the mountains to a height of 7,000 to 9,000 feet, sometimes attaining a large size. Dr. G. V. Perez, of Teneriffe, considers it might be planted with advantage under forest conditions for its timber." (*Irish Gardening, Feb. 17, 1917.*)

For previous introduction, see S. P. I. No. 41463.

45501. PHASEOLUS ACUTIFOLIUS LATIFOLIUS G. F. Freeman. Fabaceæ. Tepary bean.

From Lakeside, Calif. Seeds presented by Mr. R. B. Kanady. Received November 2, 1917.

"This bean yields heavily and has been found to be excellent for canning. The quality is fine and the bean swells in cooking more than any other that we have tried. It should be tested in a bean-growing section, as it may prove a valuable addition to the list of varieties already widely used." (*Kanady.*)

45502. DROSOPHYLLUM LUSITANICUM (L.) Link. Droseraceæ.

From Edinburgh, Scotland. Seeds presented by the Royal Botanic Garden, through Prof. Isaac Bailey Balfour. Received November 12, 1917.

An interesting insectivorous plant from Europe. This is a subshrubby plant, with a simple stem, 2 to 6 inches high, bearing at the top long, linear glandular leaves. It is an interesting fact that these leaves are revolute, rather than involute, as in the *Droseras* and other such plants. The bright-yellow flowers, about 1½ inches across, are borne on a stalk about a foot high. The glands on the leaves are purple, some stalked and some sessile, viscid, and not motile as in *Drosera*. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1077.*)

45503. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

From Felton, Del. Scions collected by Mr. Peter Bisset on the property of Mr. J. W. Killen. Received November 14, 1917.

"This tree has lived through several winters at Felton, Del. This type of persimmon, as is well known, is rather susceptible to low temperatures, and a tree which has stood the winter of Delaware should receive the attention of growers." (*Bisset.*)

45504. *CASTANOSPERMUM AUSTRALE* Cunn. and Fraser. Fabaceæ.
Moreton Bay chestnut.

From Dominica, British West Indies. Seeds presented by the Botanic Garden through the curator, Mr. Joseph Jones. Received November 16, 1917.

The *Moreton Bay* chestnut is a large ornamental leguminous tree, native to Queensland and New South Wales, where it is said to grow abundantly along rivers. The large evergreen leaves and the racemes of bright orange-yellow flowers make an attractive picture in any subtropical garden. The pod, 8 to 9 inches long, bears four to five globular seeds larger than Italian chestnuts. These seeds are roasted and eaten like chestnuts. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 688, and *Gardeners' Chronicle*, 3d ser., vol. 38, p. 244.)

45505 and 45506.

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 17, 1917.

45505. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"(No. 195. Avocado No. 32. City of Guatemala, Guatemala. November 6, 1917.) *Akbal*. This is a variety noteworthy for earliness, and bud wood has been included in the set primarily for this characteristic. It is, however, of very good quality and has no visible defects except a somewhat undesirable shape. Judging by its behavior in Guatemala, it should be the earliest variety in the collection, but it is not safe to depend upon its retaining this characteristic in the United States, since slight local variations in soil or climate sometimes affect the time of ripening very noticeably and its earliness may not be altogether an inherent characteristic.

"The parent tree is growing in the grounds of Eulogio Duarte, near Amatitlan. The location is known as Los Rastrojos and is about 2 miles from the plaza of Amatitlan, on the road which leads past the cemetery toward the hills. The altitude is approximately 4,200 feet. The tree is about 40 feet high, spreading but of compact growth, the crown being fairly dense. The trunk is about 20 inches thick at the base, and it branches 10 feet from the ground. According to the owner, the tree is 6 years old, but to judge from its size it can not be less than 20. It seems to be vigorous and in good condition. The bud wood which it yields is fairly satisfactory, the growths being well formed though not very stout, while the eyes are vigorous and do not drop quickly.

"This is a rather warm region; hence, there is nothing to indicate that the variety will be unusually hardy.

"The crop harvested in the fall of 1917 was a good one. According to the owner, it was 600 fruits, but it seems probable that it was considerably more. The bearing habit of the tree gives promise of being very satisfactory. The flowering season is in November and December, and the fruit ripens from the following August to November. It is fully ripe and in perfect condition for picking by the middle of October, whereas the average variety of the same region is not mature until January at the earliest.

"In two characteristics this variety does not seem to agree with the Guatemalan race. It has a thin skin, and the seed coats do not adhere

45505 and 45506—Continued.

closely to the cotyledons. A few other varieties showing these same characteristics were seen in the same locality, and it is possible that they may not be true Guatemalan avocados, though in most respects they appear to belong to this race.

"In form the fruit is long and slender, sometimes slightly curved, and sometimes becoming pyriform. It is medium sized, weighing about 12 ounces. The surface is smooth and deep green in color. The skin is thin and surrounds deep-yellow flesh of good quality, without fiber or discoloration. The seed is medium sized, and while it never rattles in its cavity it does not fit as snugly as in nearly all other Guatemalan varieties.

"A formal description of this variety is as follows:

"Form elongated to slender pyriform, sometimes curved; size medium, weight 12 ounces, length $5\frac{1}{2}$ to $6\frac{1}{2}$ inches, greatest breadth $2\frac{1}{4}$ to 3 inches; base narrow, rounded, the short, stout stem (2 to 3 inches long) inserted obliquely; apex quite smooth, uniformly bright green in color, with very numerous minute yellowish dots; skin very thin, less than one-sixteenth of an inch, but firm and tough; flesh rich yellow near the seed cavity, changing to light green near the skin, firm, of fine texture, free from fiber, and of rich, nutty flavor; quality very good; seed medium sized, weighing about $1\frac{1}{2}$ ounces, conical to slender conical in form, the cotyledons smooth, with the seed coats adhering loosely." (*Popenoe.*)

45506. MALPIGHIA sp. Malpighiaceæ.

"(No. 196. City of Guatemala, Guatemala. November 6, 1917.) Cuttings of *azerola*, from Amatitlan (altitude 3,900 feet). The name *azerola*, which properly belongs to species of *Crataegus*, is applied, in central Guatemala, to a large Malpighia the fruits of which are not unlike those of the Barbados cherry (*Malpighia edulis*). I have seen the plant only in a few places; it is most abundant at Amatitlan, where it is seen in a large proportion of the gardens and dooryards.

"This species is much larger than *M. edulis*, often becoming a small bushy tree 20 feet in height, but more commonly seen as a large shrub, spreading in habit, with a dense crown. When young, the leaves are covered with a thick whitish tomentum; when mature, they are membranaceous, elliptic-acuminate in form, about 4 inches long, cuneate at the base, bright green and glabrous above, heavily pubescent with the venation prominent below. The flowers are produced in small axillary clusters. Individually, they are scarcely an inch broad, with clawed crapelike petals of lilac-pink color. The fruits, which ripen mainly during August and September, are the size of a large cherry, but flattened and sometimes pointed toward the apex. They are bright red when fully ripe, with a tender skin and juicy, whitish flesh of peculiar sub-acid flavor. The seeds, three in number, are roughly winged. The character of the growth suggests that this plant may be slightly hardy. It has not been seen in the lowlands, but is grown at altitudes of 4,000 to 5,000 feet where the climate is comparatively cool, but not cold enough to experience severe frosts. The plants produce abundantly. While not a fruit likely to become of great importance in the United States, it possesses sufficient interest and value to merit a trial. The regions in which it seems likely to succeed are Florida, southern Texas, and California." (*Popenoe.*)

45507. CASTANEA CRENATA Sieb. and Zucc. Fagaceæ.**Japanese chestnut.**

From Felton, Del. Seeds purchased from Mr. J. W. Killen. Received November 16, 1917.

"Seeds to be grown as stock on which to graft Chinese chestnuts and also Dr. Van Fleet's selected hybrids. The trees from which these nuts were gathered were interplanted about 20 years ago with American chestnuts, which have all been killed by the chestnut bark disease, while the Japanese trees are still thriving and bearing excellent crops of nuts. The blight has attacked some of the branches of the Japanese trees, but has not proved serious." (*Peter Bisset.*)

45508 and 45509.

From Paraguay. Seeds presented by Mr. Thomas R. Gwynn, Concepcion. Received November 19, 1917.

45508. CECROPIA ADENOPUS Martius. Moraceæ.

A tall tree which grows on river banks, both on the mainland and on the islands. The large leaves are whitish beneath, rough, and give the tree its name of *Palo de lija* (sharkskin wood). The leaves are considered a remedy for coughs. It is native to Misiones, Corrientes, Chaco, Formosa, and northern Argentina. (Adapted from *Venturi and Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 63.)

45509. DIOCLEA REFLEXA Hook. f. Fabaceæ.

A climbing shrub, called in Paraguay *Liana de flores moradas*, with beautiful reddish purple flowers. It may be distinguished from the related *Dioclea violacea*, which has straight, erect, violet-colored bracts, by its reflexed, reddish bracts. (Adapted from *Hooker, Niger Flora*, p. 306.)

45510. CAJUPUTI LEUCADENDRA (Stickm.) Rusby. Myrtaceæ.

(*Melaleuca leucadendron* L.)

Cajuput tree.

From Madagascar. Seeds presented by Mr. E. Jaeglé, director, Agricultural Station of Ivoloïna, through Mr. James G. Carter, American consul, Tamatave. Received March 31, 1917.

"The wood of this tree shows a most beautiful combination of light and darker shades, which may be compared in appearance to ripple marks. It is hard, heavy, and close grained, excellent for shipbuilding and for posts in damp ground; it is said to be imperishable under ground. The papery bark also is worthy of notice for its great durability and for being impervious to water, instances being known where it has been used for dam and drainage purposes in conjunction with timber, and it has been found that the bark was quite sound although the timber was decayed." (*Maiden, Useful Native Plants of Australia*, p. 569.)

45511. RICINUS COMMUNIS L. Euphorbiaceæ.**Castor-bean.**

From Montevideo, Uruguay. Seeds presented by Señor Ricardo Salgueiro Silveira, for the secretary of the Association of Agriculturists. Received November 22, 1917.

Received as *Ricinus sanguinalis* which is considered a horticultural form of *R. communis*.

45512. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Citron.

From Bell, Md. Presented by Dr. W. Van Fleet. Received November 22, 1917.

"A preserving citron, 6 to 8 inches long and 3 to 4 inches in diameter. Skin green and smooth; flesh white and solid; seed in green fruit soft. May prove valuable for marmalades and preserves, also for cooking with fish or meat." (*B. T. Galloway.*)

45513 to 45522. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Mauritius. Presented by Mr. H. A. Tampany, Director of Agriculture, Reduit, Mauritius. Received November 20, 1917.

45513 and 45514. "Var. *M. P. 55*. Foliage broad, canes stout and tall, inclined to trail, 10 to a stool; internodes cylindrical, rather long, dark purple with waxy coating, no channel; eye bud rather large, broad, and slightly bulging at base, apex flat and adhering." (*Tampany.*)

A widely grown variety, exceeded only by *White Tanna* in area under cultivation in Mauritius. Of all the land devoted to sugar-cane raising 12 per cent is occupied by this variety. In Mauritius this variety seems to prefer the lowlands, two-thirds of the area devoted to it being below 600 feet in altitude. The origin of this variety is traced to Mr. G. Perromat, manager of the Clemencia estate, Flacq, who began to grow canes from seed in 1891. *M. P. 55* is the best of the varieties he succeeded in raising. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius.*)

45513. "Cuttings."**45514. "Seeds."**

45515. "Cuttings of *M. P. 131*. Foliage narrow; canes tall, inclined to trail, of medium size, 10 to 15 to a stool; internodes zigzag, of medium length, dark violet, slightly waxy, the channel slightly marked in some cases, apparent in others; eye bud broad, pentagonal, flat, base straight, sides perpendicular, apex adhering." (*Tampany.*)

A variety of minor importance on the island of Mauritius, occupying only a small part of the land devoted to sugar cane. It is a variety which prefers the lowlands, most of it being grown below 600 feet altitude. This is one of the varieties grown from seed by Mr. G. Perromat, manager of the Clemencia estate, Flacq. It ranks second in value of all the varieties that he originated. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius.*)

45516. "Cuttings of *M. 1237*. Foliage rather broad; canes erect, rather tall, of medium size, 10 to 12 to a stool; internodes straight, of medium length; reddish purple, waxy, the channel deeply marked, running almost the entire length of the internode; eye bud of medium size, pentagonal, bulging at the center, apex adhering." (*Tampany.*)

45517 and 45518. "*D. K. 74*. Foliage broad; canes medium in size, fairly tall, inclined to trail, 11 to a stool; internodes cylindrical, of medium size, yellow, sunburns red, no channel; eye bud of medium size, triangular, slightly bulging at base, apex not quite adhering." (*Tampany.*)

A variety of minor importance on the island of Mauritius. It occupies 5.48 per cent of the land devoted to sugar-cane raising. It is a

45513 to 45522—Continued.

variety which grows best on the lowlands, almost all of it being grown below 600 feet in altitude. This variety was introduced in 1905 by the Forest Department of Mauritius, from Barbadoes. Through an error at the time of introduction, this variety has been given the wrong name. It has been found that this is the well-known Demerara seedling properly known as *D.74*. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45517. "Cuttings."**45518. "Seeds."**

45519 and 45520. "*White Tanna*. Foliage broad; canes rather stout, erect, medium height, 10 to a stool; internodes cylindrical, greenish red with characteristic cracks, medium size and height, no channel; eye bud of medium size, flat, circular, apex not quite adhering." (*Tampany*.)

This is the widest grown of all the sugar-cane varieties on the island of Mauritius, occupying 47 per cent of all the land given over to sugar-cane raising. It is a variety which is grown equally well on the highlands or lowlands. There are two sources from which this variety came: It arose as a sport on several estates of the colony, and has since been widely cultivated; it was also received from the Department of Agriculture of New South Wales in 1895. The present variety is probably descended in part from each of the sources mentioned above. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45519. "Cuttings."**45520. "Seeds."**

45521. "Cuttings of *16804*. Foliage broad; canes stout, medium height, inclined to trail, seven to a stool; internodes cylindrical, purple-black, rather short, slightly channeled; eye bud of medium size, slightly bulging, base about twice as long as the distance of the apex from the base." (*Tampany*.)

45522. "Cuttings of *Striped Tanna*. Foliage broad; canes very stout and fairly tall, very erect, eight to a stool; internodes cylindrical, rather short, reddish black with light-red stripes and characteristic cracks, no channel; eye bud of medium size, bulging and prominent, apex blunt." (*Tampany*.)

Of all the land used for raising sugar cane in Mauritius, 8.76 per cent is devoted to the growing of this variety. It stands third in importance on the island of Mauritius, being exceeded in area planted only by the varieties *White Tanna* and *M. P. 55*. This variety will grow on high or low land, as much being grown about 600 feet as below. The *Striped Tanna* was received from Queensland in 1890. (Adapted from *Henri Robert, Sugar-Cane Varieties in Mauritius*.)

45523. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.**Japanese apricot.**

From Yokohama, Japan. Seeds purchased from the Yokohama Nursery Co. Received November 28, 1917.

A tree with somewhat the appearance of the common apricot, but with greenish or gray bark and duller foliage. The leaves are relatively small, long pointed, light colored beneath; and the fragrant flowers are sessile or nearly so. Various forms (such as the white, double white, double rose, and weeping) are in cultivation. The double-flowered form is especially valuable in gardens for its early and profuse blooming.

The fruit is about an inch in diameter and is used in Japan as a pickle. The fruits are picked just before becoming ripe and soaked in water for 24 hours; then they are mixed with salt and the leaves of the red-leaved variety of *Perilla nankinensis* and allowed to stand a week or less, depending on the temperature. After this, the fruits are spread in the sun to dry and while drying are sprinkled with the juice of the *Perilla* leaves. After three to five days they are put up in weak brine, in which they will keep indefinitely. The pickled fruit is exceedingly sour; it often forms a part of the ration of the Japanese soldiers. For best results the trees should be grown in a shady place. (Adapted from *notes of Frank N. Meyer.*)

45524. *CHENOPODIUM AMBROSIoidES* L. Chenopodiaceæ.

From India. Seeds presented by Mr. H. G. Carter, director, Botanical Survey of India, Calcutta. Received November 28, 1917.

"Obtained from plants grown near Calcutta." (*Carter.*)

Especially developed strains are said to afford a high percentage of an essential oil, to which tonic and antispasmodic properties are attributed. In Europe it has a reputation as a useful remedy in nervous affections, particularly chorea. (Adapted from *The National Dispensatory*, p. 1067.)

45525 to 45534.

From Hupeh Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 21, 1917. Quoted notes by Mr. Meyer.

45525 and 45526. *LYCORIS AUREA* (L'Her.) Herbert. Amaryllidaceæ.

45525. "(No. 1283. Chienchingshan, near Kingmen. September 21, 1917.) Seeds of a bulbous plant, flowering in late summer, with large ocher-yellow flowers borne on stems often over 2 feet tall. The foliage dies down in summer, but comes up again in early spring or late winter where the climate is mild. Apparently withstands zero temperatures. Collected in pockets of humus soil beneath tall trees on a rocky, mountain slope at an altitude of more than 2,000 feet above sea level. May possibly be hardy at Washington, D. C."

45526. "Bulbs of No. 1283 [S. P. I. No. 45525]."

45527 and 45528. *LYCORIS RADIATA* (L'Her.) Herbert. Amaryllidaceæ.

45527. "(No. 1284. Kingmen. September 26, 1917.) Bulbs of a plant, with large masses of carmine-red flowers, which flowers in late summer and early autumn. The foliage dies down in spring, but the leaves sprout up again after flowering has ceased. It loves partial shade, does well on dry banks, debris, and beneath trees, but seems to withstand less frost than the preceding number. This ought to thrive throughout the whole southern United States, and possibly in California. Chinese name *Lung chiao hua* (dragon's-claw flower.) Obtained from the garden of Rev. J. S. Johnson, Swedish American Missionary at Kingmen."

45528. "(No. 1285. Kingmen. September 26, 1917.) Var. *flavescens*. Bulbs of a dragon lily, with pale-yellow flowers borne on stalks considerably taller than those of the preceding number [S. P. I. No. 45527], of which it seems to be a variety. This and the three preceding numbers [S. P. I. Nos. 45525 to 45527] can

45525 to 45534—Continued.

possibly be grown for cut flowers in greenhouses in the northern United States, while in the South they might even become weeds, as they are here and there in central China. They also deserve to be taken in hand by plant breeders, for they certainly are amenable to selection and possibly to hybridization, and they seem to suffer from very few natural enemies."

45529 to 45531. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

45529. "(No. 2449a. Kingmen. September 13, 1917.) *Tung pai ts'ai* (winter white vegetable). A variety of *pai ts'ai*, said to grow into large solid heads when planted in the fall and given sufficient space in rich, moist soil. When sown thickly in beds in spring or fall and not transplanted, it is pulled up with the roots and eaten, chopped up and boiled like spinach. Can also be employed in sauerkraut making. To be tested especially in the southern sections of the United States."

45530. "(No. 2450a. Kingmen. September 13, 1917.) *Hei pai ts'ai* (black-white vegetable). A variety of *pai ts'ai* with very dark green, bullate foliage, not making a closed head. Sown in the fall and transplanted at distances of half a foot or more in all directions. It needs a moist, muck soil to grow to perfection, and in mild climates it keeps on growing throughout the whole winter. It is eaten in soups, chopped up like spinach. To be tested mainly in the southern United States."

45531. "(No. 2451a. Kingmen. September 14 and 15, 1917.) A variety of *pai ts'ai*, said to resemble No. 2449a [S. P. I. No. 45529] in most ways; but it grows taller and larger. It is cultivated in the same manner. Chinese name *Hsiangyang pai ts'ai*, apparently denoting that this variety originally came from the city of Hsiangyang, 100 miles north of Kingmen."

45532. *AESCULUS WILSONII* Rehder. Æsculaceæ.

Horse-chestnut.

"(No. 2452a. Kingmen. September 24, 1917.) *So lo shu*. The interesting and beautiful Chinese horse-chestnut, a tree deserving to become widely planted in the southern United States. Not as charming as the European horse-chestnut, but better able to withstand hot summers and long periods of drought. To be planted in those sections of the United States where temperatures do not fall much below zero."

For an illustration showing this horse-chestnut in its native habitat, see Plate III.

45533. *ALLIUM* sp. Liliaceæ.

Onion.

"(No. 143b. Anlu. August 28, 1917.) Bulbs of a small onion, pickled in vinegar and used as a relish with meals; said to promote good health and to aid the digestion."

45534. *CITRUS ICHANGENSIS* Swingle. Rutaceæ.

Ichang lemon.

"(No. 145b. Kingmen. September 26, 1917.) Fruits of a citrus species called *Hsiang yuan* (fragrant, round). It exists in many varieties and is able to withstand colder temperatures than the tangerine and kumquat, but is not as hardy as *Poncirus trifoliata* (*Citrus trifoliata*). The rind exhales a delightful fragrance, and the Chinese use the fruits



THE CHINESE HORSE-CHESTNUT IN ITS NATIVE HABITAT. (*AESCULUS WILSONII* REHDER, S. P. I. No. 45532).

Although Frank N. Meyer, the agricultural explorer, did not find this tree so charming as the European horse-chestnut, he predicted that it would prove better able to withstand hot summers and long periods of drought. It has narrower leaves which do not appear to be whipped by the wind so easily as do those of the European species. Specimens are growing near Seattle and promise to be successful there, but it deserves a trial in the parks of the eastern United States. (Tree 80 feet high, in flower, photographed (No. 96) by E. H. Wilson, Hsinwenping, Szechwan, China, June 1, 1908.)



THE SWEET GRANADILLA OF GUATEMALA. (*PASSIFLORA LIGULARIS* JUSS.,
S. P. I. No. 45614).

One of the best of the granadillas. According to Mr. Wilson Popenoe, this plant grows in parts of Guatemala apparently too cold for the avocado. It is strikingly different from the common species (*P. edulis*), which is grown in California and cultivated extensively in Australia, being orange-yellow instead of dull purple in color, with a rind so hard that it does not wrinkle but protects the fruit, so that it is transported as much as a hundred miles over the mountains by native carriers. It brings relatively high prices on the markets. The aroma of the fruit is delightful, and the flavor is not so acid as that of other species. It deserves to be grown and crossed with *P. edulis* and with the sour maypop (*P. incarnata*), which is hardy as far north as Washington, D. C. (Photographed by Wilson Popenoe, San Lorenzo del Cubo, Guatemala, October 19, 1916; P16825FS.)

45525 to 45534—Continued.

as room perfumers and carry them about instead of a perfumed handkerchief. Since they possess an abundant juice of good quality, foreign residents use these fruits for making lemonade. If it were not for the many very large seeds, this fruit could well be substituted for the ordinary lemon; as it is, it may be grown considerably north of the true citrus belt to supply a home product from which to make refreshing drinks."

45535 and 45536.

From Mexico. Seeds presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyacán, City of Mexico. Received December 5, 1917.

45535. *AMARANTHUS PANICULATUS* L. Amaranthaceæ. **Huauhtli.**

An annual, with entire leaves, bearing the abundant grainlike edible seeds in dense panicles. Some plants produce white seeds, and some produce black. The white seeds are those chiefly used by the natives. This plant is found both in cultivation and growing wild. The seeds are ground and cooked in the form of small cakes known as "alegría," these cakes being eaten in large quantities by the poorer classes, especially during a time of scarcity of corn. This plant was cultivated by the Aztecs before the discovery of America. It occupied an important place in the fare of the people, and accounts show that every year 18 granaries, each with a capacity of 9,000 bushels, were filled by Montezuma. Often the tribute exacted by the Aztecs from the people they conquered would take the form of a certain quantity of this grain. It was so closely connected with the life of the people that it figured in religious observances. Spanish historians, writing in the first half of the seventeenth century, give accounts of how the ancient Mexicans made figures of their gods out of the flour obtained from the seed. The figures were carried in processions, and at the end of the ceremony were broken up and served to the people as a form of communion. (Adapted from Safford, *Proceedings International Congress of Americanists*, p. 286, 1917.)

45536. *CHENOPODIUM NUTTALLIAE* Safford. Chenopodiaceæ.

Huauhtzontli.

"Huauhtzontli combines the properties of a cereal and a vegetable, and furnishes a substantial meal. When fresh and the seeds are 'in milk,' the food is, to me, delicious. I am told that it is almost as good when prepared from the dried inflorescence." (Mrs. Nuttall.)

45537 to 45539.

From Panama, Republic of Panama. Seeds presented by Señor Ramon Arias Féraud. Received November 30, 1917.

45537 and 45538. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

"A fine oblong papaya, with tapering ends, about 12 to 18 inches long and 5 to 6 inches in diameter." (Arias Féraud.)

45537. Male.

45538. Female.

45539. *CUCURBITA PEPO* L. Cucurbitaceæ.

Squash.

"An edible squash, which, when well mashed and mixed with olive oil and vinegar, makes a splendid salad." (Arias Féraud.)

45540 to 45553.

From the city of Guatemala, Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 24, 1917. Quoted notes by Mr. Popenoe.

45540 to 45546. CHAYOTA EDULIS Jacq. Cucurbitaceæ.

Chayote.

(*Sechium edule* Swartz.)

45540. "(No. 197a. November 7, 1917.) *Güisquil de Santa Maria*. Locally considered one of the very best varieties. It is a short, broad fruit, compressed on the sides, and weighing 12 ounces to a pound. The surface is smooth, free from corrugations, and pale to bright green in color. Green-fruited *güisquiles* are considered by the Guatemalans to have more flavor than the white-fruited varieties.

"All smooth, small to medium-sized *güisquiles* are called *peruleros*; the spiny or rough fruits are termed simply *güisquil* in most instances. Occasionally they have distinguishing names, such as *güisquil de Santa Maria*."

45541. "(No. 198a. November 7, 1917.) Large white *perulero*. Probably the best of the *perulero güisquiles*. A pear-shaped, waxy white fruit without prickles and with a surface free from wrinkles or corrugations. Weight about 5 ounces. One of the rarest varieties in the market."

45542. "(No. 199a. November 7, 1917.) *Güisquil de Santa Maria*. A large form similar to No. 197a [S. P. I. No. 45540], but somewhat more prickly. It is considered a very good variety. For cultivation in the United States, however, varieties without prickles seem preferable, as they are more attractive in appearance and easier to handle. In Guatemala a large proportion of *güisquiles* are prickly, but the presence of the prickles does not seem to make any difference to the natives when purchasing the fruits in the market."

45543. "(No. 200a. November 7, 1917.) Large pale-green *perulero*. A pear-shaped fruit about 8 ounces in weight, with a smooth surface pale green in color. Somewhat larger than the large white *perulero*, No. 198a [S. P. I. No. 45541], but said to be slightly inferior in flavor."

45544. "(No. 201a. November 7, 1917.) Small white *perulero*. A popular *güisquil*, considered of good quality. It is pear shaped, 2 to 3 ounces in weight, waxy white in color, with a smooth surface free from spines."

45545. "(No. 202a. November 7, 1917.) Small pale-green *perulero*. Practically identical with the small white *perulero*, No. 201a [S. P. I. No. 45544], except in the color, which is pale waxy green."

45546. "(No. 203a. November 7, 1917.) Small green *perulero*. A common variety in the markets, and apparently a favorite. Nearly round in form, about 2 ounces in weight, with a smooth surface deep green in color. Almost a miniature *güisquil de Santa Maria* No. 197a [S. P. I. No. 45540]."

45547. SOBRALIA MACRANTHA Lindl. Orchidaceæ.

"(No. 204a. November 7, 1917.) A terrestrial orchid found in the vicinity of the city of Guatemala, at altitudes of 4,000 to 5,000 feet. The

45540 to 45553—Continued.

plants sent under this number are from the barranca near Chinautla, a few miles north of the city.

"The fact that this handsome species grows in a cool climate suggests that it may be sufficiently hardy for open-air culture in California and Florida. Here in Guatemala it is often planted in gardens, where, during October, it makes a fine showing with its large flowers. The plant sends up several stems 3 to 4 feet in height. At the summit of each, two or three flowers are produced, only one opening at a time. In size and color the flowers resemble some of the fine cattleyas; they are 2 to 3 inches broad, deep lilac in color, deepening to lilac purple in the throat."

45548. *ANNONA DIVERSIFOLIA* Safford. Annonaceæ.

Ilama.

"(No. 205a. November 8, 1917.) The *anona blanca*, from Chiquimula (altitude 1,400 feet).

"This species is not known in the highlands of Guatemala, nor have I seen it elsewhere except in the vicinity of Chiquimula and Jocotan, both in the southeastern part of the republic, close to the border of Honduras.

"The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaflike bracts at the bases of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*. The season of ripening in southeastern Guatemala is September.

"While I have not been able to test this fruit thoroughly, it seems to be far superior to *A. reticulata* and to approach the cherimoya in quality. If it succeeds at low altitudes in the Tropics, as seems to be the case, it may prove to be a valuable species for cultivation in regions which are too hot for the cherimoya. It should certainly be given a careful trial in such regions as southern Florida, Cuba, and Porto Rico. I do not know how productive the tree may be, since I have seen only two specimens in fruit, and these were growing under rather unfavorable conditions.

"The seeds forwarded under this number were taken from fruits purchased in the market of Chiquimula by Mr. B. B. Williams, of the Friends' Mission."

45549. *CRANIOULARIA ANNUA* L. Martyniaceæ.

"(No. 206a. November 8, 1917.) *Uña de gato* (cat's-claw). A large herbaceous annual, common in central and eastern Guatemala at altitudes of about 2,000 feet. The seeds forwarded under this number came from the valley of the Rio Motagua near La Canoa, on the Guatemala-Coban trail.

"The plant grows about 4 feet high, with large, soft leaves. It produces along the stem numerous gloxinialike flowers, white in color, with a purplish blotch in the throat."

45550. (Undetermined.)

"(No. 207a. November 8, 1917.) Seeds of a small, flowering tree from the mountains of Baja Vera Paz, between Salama and Purula. I have

45540 to 45553—Continued.

seen it cultivated in Antigua and am told that it occurs wild in that region as well.

"The wild trees, which grow on rocky, rather dry slopes, reach 20 feet in height. In April and May they produce numerous flowers 2 inches in diameter, white upon first opening, but later becoming bright pink. When in full bloom the tree is very decorative in appearance and worthy of a trial in the warmest sections of the United States."

45551. (Undetermined.)

"(No. 208a. November 8, 1917.) A flowering vine from the summit of the Cachil Mountains, north of Salama, Baja Vera Paz; altitude 5,250 feet.

"This plant is occasionally seen climbing over shrubs and small trees. It does not make very luxuriant growth, but produces clusters of small red flowers which are very attractive. The flowers are followed by winged seed capsules. For trial in California and Florida."

45552. GLIRICIDIA MEISTOPHYLLA (Donn. Sm.) Pittier. Fabaceæ.

"(No. 209a. November 8, 1917.) Seeds of a leguminous shrub from the mountains of northern Baja Vera Paz."

45553. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Avocado seeds to be grown for stocks."

45554 to 45557.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Gardens. Received November 30, 1917.

45554. PAVETTA ZIMMERMANNIANA Valet. Rubiaceæ.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small, slender-tubed white flowers.

"The remarkable researches of Zimmermann and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of Pavetta, Psychotria, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Mycobacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and, when the seed germinates, grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells, which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules. Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the facts that these rubiaceous plants with

45554 to 45557—Continued.

bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitrogen-fixing legumes as fertilizers, the suggestion of Faber that we may have in these tropical trees and shrubs plants of positive agricultural value for the tropical planter is well worthy of consideration. The value of the mulch formed by the leaves of leguminous and other plants is keenly appreciated by the best cultivators, and it may be possible to find suitable small shrubs of Pavetta or other rubiaceous plants which will be worth while growing for their nitrogen-fixing leaf bacteria in the orchards of our semi-tropics or wherever else the climate will permit of their cultivation." (*Fairchild.*)

45555. *MACROZANONIA MACROCARPA* (Blume) Cogn. Cucurbitaceæ.
(*Zanonia macrocarpa* Blume.)

"This is one of the most remarkable climbing vines or lianas of Java; remarkable because of the size of the fruits, which are as large as medium-sized pumpkins and are borne high in the tops of the forest trees. As the fruits ripen they open at the bottom, and through the triangular opening the great winged seeds fall out and, like flocks of aeroplanes, sail away in a most spectacular manner. No seed that I know of illustrates more perfectly the principles of the aeroplane than the seeds of this plant; and if for no other purpose than that of instructing the youth in our schools with regard to the principles of seed dissemination, this interesting plant is worthy of cultivation in our own tropical regions. It should be experimented with in Porto Rico and Hawaii; and it might succeed in the hammocks of Florida." (*Fairchild.*)

45556. *MANGIFERA ODORATA* Griffith. Anacardiaceæ.

"A large tree from Malacca, Java, and probably other islands in that region, where it is known as *kuwini*. The leaves are about the size of those of the common mango; like the latter, the flower possesses but one or, at most, two fertile stamens. The fruit is described by Griffith as oblong, yellow-green with yellow spots, ill-smelling, and filled with sticky gum; flesh yellow, fibrous, sweet, not turpentine; stone compressed, fibrous. This species of *Mangifera* is little known in horticulture and seems nowhere to be held in great esteem as a fruit. It is of interest in connection with studies of the cultivated mangos." (*Wilson Popenoe.*)

45557. *CEIBA PENTANDRA* (L.) Gaertn. Bombacaceæ.
(*Eriodendron anfractuosum* DC.)

Kapok.

A moderate-sized, quick-growing, upright thornless tree, indigenous to tropical Asia and Africa. A striking peculiarity is the manner in which the branches stretch out horizontally in whorls at right angles to the stem. Around the base of the tree are produced thin buttresses or flanges which sometimes extend for 30 feet or more from the base. The tree is deciduous in the dry season, January to April, the greenish white flowers being produced in clusters shortly after the leaves have dropped; the fruit pods which follow are ripe about three months later. The latter contain a quantity of silky cotton (kapok), and when ripe burst open and disperse their contents. The pods should therefore be collected before they are quite dry and then dried in the sun. Kapok

45554 to 45557—Continued.

is largely used for stuffing pillows and mattresses and for upholstering, etc., both in the countries where it is grown and in those to which it is exported. The largest supply comes from Java, where the trees are grown as a secondary product. The wood is used to some extent in interior construction, but it is soft, white, and brittle. The tree is readily propagated from seed or cuttings and thrives from sea level up to 2,000 feet. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 518, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 700.)

45558 and 45559.

From Berkeley, Calif. Seeds presented by Mr. E. B. Babcock, Division of Genetics, Department of Agriculture, University of California. Received November 30, 1917. Quoted notes by Mr. Babcock.

45558. AQUILEGIA TRACYI × CHRYSANTHA. Ranunculaceæ. Columbine.

"Unguarded seed from F_1 hybrids between *Aquilegia tracyi* ♀ and *A. chrysantha* ♂. Cross made in 1915. Parents and F_1 plants now in plant-breeding garden of the Division of Genetics, Department of Agriculture, University of California. This seed may produce extremely variable offspring, some of which may be of greater ornamental value than either of the parents."

45559. DELPHINIUM CARDINALE × (?). Ranunculaceæ. Larkspur.

"Unguarded seed from an F_1 hybrid between *Delphinium cardinale* [a red-flowered species from southern California] and a garden hybrid with deep-blue flowers. Cross made in 1915. F_1 plants now in plant-breeding garden of Division of Genetics, Department of Agriculture, University of California. This seed may produce extremely variable offspring, some of which may be of greater ornamental value than either of the parents."

45560 to 45564. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Guatemala. Collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received November 24 to December 19, 1917. Quoted notes by Mr. Popenoe.

45560. "(No. 212. Avocado No. 26. City of Guatemala. November 13, 1917.) *Manik*. Bud wood of a productive and rather early variety of excellent quality. It is a medium-sized fruit of pleasing form and clear yellow flesh of unusually rich flavor.

"The parent tree is growing in the finca La Polvora, in Antigua. The altitude is about 5,100 feet. While it is growing among coffee bushes and grevilleas, the tree is not crowded and has developed to a large size. It stands about 50 feet high, with a rather slender trunk and a dense crown, the trunk being 2 feet thick at the base and branching about 8 feet from the ground. The age of the tree is probably 30 years or more. It is badly attacked by leaf-gall, but in general has the appearance of a strong, vigorous variety, the branchlets being well formed, long, round, and stout. The bud wood is good, having strongly developed eyes well placed for cutting.

"Antigua does not experience severe frosts; hence, it is impossible to determine in advance of a trial in the United States whether or not the variety is any hardier than the average of the Guatemalan race.

45560 to 45564—Continued.

"The flowering season is February and March.. The tree blooms profusely and in some years sets enormous crops of fruit. In 1917 a very heavy crop was ripened. In general, the bearing habits of the tree give promise of being unusually good, there being a tendency for the fruits to develop in clusters. The season of ripening is properly from February to June, but fruits picked early in December develop fairly good flavor upon being ripened in the house. The season may be termed early to midseason.

"The fruit is more variable in form than that of most other varieties. The range is from oval to slender pyriform, nearly all the fruits being of the latter shape, without, however, a well-defined neck. The weight varies from 8 to 12 ounces. The surface is slightly rough and green in color. The skin is moderately thick, the flesh rich yellow, quite free from all fiber or discoloration, and of very rich and pleasant flavor. The seed is a trifle large in some specimens, small in others, being medium sized or rather small on the average. It is tight in the seed cavity.

"The variety may be formally described as follows:

"Form oval to elliptic-pyriform; size below medium to medium, weight $8\frac{1}{2}$ ounces to 12 ounces, length $3\frac{1}{4}$ to $4\frac{1}{4}$ inches, breadth $2\frac{1}{4}$ to $3\frac{1}{4}$ inches; base rounded to pointed, the stem inserted slightly to one side without depression; apex rounded to broadly pointed; surface sparsely pebbled, uniformly so, bright green in color, with comparatively few small yellowish dots; skin not very thick for this race, one-sixteenth of an inch near the stem and slightly more toward the apex of the fruit, hard and coarsely granular; flesh rich cream yellow in color, free from fiber and with no discoloration, firm and unusually dry, of rich and pleasant flavor; quality very good; seed ovoid-conical, medium sized, weighing 1 ounce more or less, tight in its cavity, with both seed coats adhering closely to the smooth cotyledons."

45561. "(No. 211. City of Guatemala. November 13, 1917.) *Kaguah*. Bud wood of avocado No. 33 from the finca La Polvora, in Antigua. A promising variety in appearance, but since ripe fruits were not tested it should be held for limited distribution in California and Florida.

"The parent tree is about 30 feet high, slender, the crown fairly dense but not broad. The trunk is 8 inches thick at the ground, branching at a height of about 15 feet. The crop this season is satisfactory, though not to be termed heavy. The growth seems to be vigorous and healthy, the branchlets being round and well formed, with the buds conveniently placed for cutting and of large size, indicating that the variety will probably be easy to propagate. The wood is not unusually brittle.

"The location of the tree is in the finca La Polvora, at Antigua, Guatemala. The altitude is about 5,100 feet. The tree stands among coffee bushes, but has room for good development.

"The fruit, judging from slightly immature specimens, will be about 24 ounces in weight, long and slender in form, with a thick neck. The surface is rough and is said to be deep green at maturity. The flesh shows no fiber nor discoloration, and its deep-yellow color indicates that it will be of good quality. The seed is medium sized and tight in the cavity. The season gives promise of being late."

45560 to 45564—Continued.

45562. "(No. 214. Avocado No. 34. November 20, 1917.) *Ishim*. Cuttings of a tree from the sitio of Ignacio Hernandez, at San Lorenzo del Cubo, near Antigua.

"While most avocados in the Antigua region do not ripen their fruits until February or March, this one matures its entire crop by the end of November. It can be considered, therefore, a very early variety, and as such is worthy of a trial in California, where early varieties of the Guatemalan race are needed. Its only visible defect is its somewhat large seed. The quality is good, and the fruit is attractive in appearance.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Hernandez, situated on the hillside above San Lorenzo del Cubo, a village some 3 miles from Antigua. The altitude is about 5,500 feet. The tree is about 35 feet high, broad and spreading in habit, with a fairly dense crown 40 or 45 feet broad, slightly inclined to droop. The trunk is divided into two main branches, one about 1 foot thick at the base, the other 9 inches. The larger branch divides 8 feet from the ground into two main limbs. The growth seems to be reasonably vigorous and the branchlets are well formed and stout. The bud wood appears to be quite satisfactory.

"This location is not sufficiently high to experience cold weather, hence the variety must be assumed to be of average hardiness for the Guatemalan race until it can be given a trial in the United States.

"The productiveness of this variety is somewhat in doubt. The crop harvested in 1917 was not large. The tree bloomed heavily in December and was setting a good crop when last seen. The season of ripening extends from October to the first of December. Probably the fruits would remain on the tree later than December if given an opportunity to do so, but as avocados are very scarce at this season of the year they are picked as soon as mature.

"The form of the fruits, pear shaped to obovoid, is attractive, as is the deep maroon color which they assume upon ripening. They are of convenient size, about 12 ounces, and the flesh is yellow and of good quality. The seed is larger than in the best late varieties, but not unreasonably large. It is tight in the cavity.

"Following is a formal description of the fruit:

"Form most commonly pyriform, but sometimes obovate; size below medium to medium, weight 10 to 12½ ounces, length 4 to 5 inches, greatest breadth 2½ to 3½ inches; base narrow to rounded, the stem inserted obliquely almost without depression; apex rounded or obtusely pointed, somewhat flattened around the stigmatic point; surface almost smooth, sometimes pitted, deep dark maroon in color, with numerous small light-maroon dots; skin unusually thin for this race, slightly less than one-sixteenth of an inch, soft, tender, peeling fairly readily when the fruit is ripe, but leaving some purplish coloration on the flesh; flesh fine grained, buttery, cream yellow in color, with slight fiber discoloration in some specimens, but no actual fiber, the flavor moderately rich and nutty; quality good; seed large, broadly conical to nearly spherical in form, weighing 1½ to 2¼ ounces, tight in the seed cavity."

45563. "(No. 215. Avocado No. 35. November 20, 1917.) *Kanan*. From the sitio of Ignacio Gonzales, at San Lorenzo del Cubo, near Antigua.

45560 to 45564—Continued.

An early variety from the Antigua region, of rather large size, desirable form, and excellent quality. Although a round avocado, the seed is not large in proportion to the size of the fruit, but on the contrary is rather small. On the whole this seems a very promising variety.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Gonzales, situated on the road to San Lorenzo del Cubo. The altitude is approximately 5,300 feet. The tree is about 35 feet high, with a trunk 30 inches thick at the base, dividing 2 feet above the ground to form two main limbs each 1 foot in diameter. These give off their first branches about 12 feet from the ground. The bud wood is excellent, the branchlets being stout and well formed, with vigorous buds conveniently placed.

"The tree did not produce a heavy crop from the 1916-17 blooms, but is said to have borne heavily in past seasons. It flowers in December and January and commences to mature its fruits the first of the following December. They are not at their best until January.

"The climate of this location is not sufficiently cold to test the hardiness of the variety; hence, it must be assumed, pending a trial in the United States, that it is of about average hardiness for the Guatemalan race.

"In form the fruit resembles the Trapp, of Florida, being round to oblate. It also resembles the Trapp in size and color, but the surface is somewhat rough and the skin thick and hard. The flesh is cream yellow, free from discoloration, and of a rich and pleasant flavor. The seed is small and tight in the cavity.

"The variety may be formally described as follows:

"Form nearly spherical, varying to slightly oblate and more rarely to broadly obovoid; size above medium to very large, weight 16 to 20 ounces, length $3\frac{1}{2}$ to $4\frac{1}{2}$ inches, greatest breadth $3\frac{1}{2}$ to 4 inches; base rounded, the stem inserted very slightly to one side and almost without depression; apex flattened; surface pebbled, bright green in color with a few large yellowish dots; skin moderately thick, nearly one-eighth of an inch, coarsely granular, woody, and brittle; flesh cream color, greenish close to the skin, free from fiber or discoloration, of rich and pleasant flavor; quality very good; seed rather small, weighing about 2 ounces, oblate in form, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons."

45564. "(No. 223. Avocado No. 36. December 10, 1917.) *Chabil*. A small, early variety of attractive appearance, desirable form, and excellent quality. It is similar to No. 6 [S. P. I. No. 43560] and is from the same region.

"The parent tree is growing in a small coffee plantation belonging to Ignacio Hernandez, situated on the hillside above San Lorenzo del Cubo, about 3 miles from Antigua. The altitude is approximately 5,500 feet. The tree is 45 feet high, the crown round, of good form, 45 feet broad, formed high above the ground. The trunk is 2 feet thick at the base, and the branches are 15 feet above the ground. The age of the tree is not known.

"The altitude of this location is not sufficient to show whether the variety is unusually hardy or not. It may be assumed to be of average hardiness for the Guatemalan race until it has been tested in the United States.

45560 to 45564—Continued.

"The crop ripened at the end of 1917 was a very large one, indicating that the productiveness of the variety is likely to prove satisfactory. The flowering season appears to be December and January, the fruiting season November to March.

"The fruit is round, weighs about 9 ounces, and is deep purple when fully ripe. The skin is thick and woody. The flesh is yellow. The seed is rather small for a round fruit, and is tight in the cavity.

"Following is a formal description of the variety:

"Form spherical or nearly so, usually slightly oblique; size below medium, weight averaging 9 ounces, length $3\frac{1}{2}$ inches, greatest breadth $3\frac{3}{8}$ inches; base slightly flattened, the stem inserted somewhat obliquely without depression; apex obliquely flattened, but not prominently so; surface practically smooth, deep dull purple in color when fully ripe, with scattering large yellowish dots; skin thick, sometimes more than one-eighth of an inch, very coarsely granular, hard and woody, rather unusually so; flesh rich cream yellow in color, with a few fine and almost unobjectionable fibers running through it, flavor rich and nutty; quality good; seed medium sized, averaging about $1\frac{1}{2}$ ounces in weight, oblate in form, tight in the cavity, with both seed coats adhering closely to the smooth cotyledons."

45565 to 45567.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received November 30, 1917.

45565. *AVENA SATIVA* L. Poaceæ.

Oats.

"*Hybride noir très hâtive* [very early black hybrid]. This variety was obtained about 10 years ago at the experimental farm at Verrieres by crossing the *Australia* and *Joanette* varieties. It has been carefully selected and has proved itself to be a well-fixed variety which is vigorous, tillers well, and attains a height of 4 to 5 feet, according to cultural conditions. The panicle is well filled and perfectly continuous, and the spikelets contain two and often three beautiful, black, full, faintly awned grains.

"In our comparative studies this variety has constantly ripened 8 or 10 days in advance of the earliest, established varieties, giving a greater yield. Sown the first of March it heads early in June, and ripens about the 20th of July. In brief, it is highly profitable, uniting the best qualities—extreme earliness, abundant production, and resistance to rust and to shattering." (*Vilmorin-Andrieux & Co.*)

45566 and 45567. *TRITICUM AESTIVUM* L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

45566. "*Aurore*. The earliest and most productive of spring wheats. May be sown up to the 15th or 25th of March. The spike is pale reddish, and the grain is large and reddish." (*Vilmorin-Andrieux & Co.*)

45567. "*Hybride des Allies*." This is a variety of wheat which was being planted in France to help relieve the food situation during the war. The following is an extract from a letter sent to the United States Department of Agriculture by M. Louis de Vilmorin: "We have been trying to help the farmers on this side with our new wheat '*Blé des Allies*,' which is on its way to prove itself a

45565 to 45567—Continued.

very valuable asset as a spring as well as a fall wheat. It can be sown under our climate until the end of March, and its earliness and heavy yield recommend it for war-time cultivation."

45568. ALBIZZIA WELWITSCHII Oliver. Mimosaceæ.

From Loanda, Angola, Africa. Seeds presented by Mr. John Gossweiler, Servicos de Agricultura. Received December 3, 1917.

Tree of 40 to 50, occasionally 80, feet in height, with a spreading truncate crown. The flowers are yellowish green or from whitish to pale straw color, and the silky puberulous petals and sepals are almost entirely united. The tawny puberulous peduncles are 1 to 2 inches in length, and proceed from the upper axils, or form short leafless terminal corymbs, sometimes scarcely overtopped by the leaves. The wood is durable, very light, and rather smooth. Reported from Upper Guinea, Lower Guinea, and Nile Land. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 362, and Hiern, *Catalogue of Welwitsch's African Plants*, pt. 1, p. 317.)

45569 to 45571.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received December 4, 1917.

45569 and 45570. LILIUM PHILIPPINENSE Baker. Liliaceæ.

Benguet lily.

"This new white trumpet lily seems destined to become of very great value to both private and commercial growers. The short time necessary to flower it after potting surprises all who are growing it for the first time. We found last year that it was all the introducers claimed for it, and from a batch of small bulbs potted September 8 we cut flowers December 3 this year. These bulbs were grown in a coldframe for nearly half that period, or they would have flowered earlier.

"The long, pure-white, sweet-scented flowers arrange beautifully in vases. The stems are sufficiently strong, without being too rigid, as is the case with other forcing *Liliums*, and the foliage is so much more graceful than that of other lilies that any flower lover would not hesitate a moment which variety to select when both were purchasable. For floral designs this lily is superior to any other white variety, and we fully expect it will in a few years be as much a market necessity as *Lilium harrisii* and *L. longiflorum* now are. Six or seven bulbs may be grown in a 6-inch pot or pan, and a dozen or more in an 8-inch pan for a good effect." (*Florist's Review*, December 13, 1917.)

45569. "Seeds."

45570. "Bulbs."

45571. ANNONA CHERIMOLA × SQUAMOSA. Annonaceæ.

Atemoya.

"Bud sticks of No. 12." This cross has produced a hybrid, the fruit of which is small and weighs on an average 175 grams, with a length of 65 millimeters and a transverse diameter of 60 millimeters. The shape of the fruit is cordiform, regular, and the carpels end in a more or less pointed protuberance. The surface is green with reddish dots on the sun-exposed side and covered by a white bloom. The skin is quite thick and tough. The pulp is white, juicy, sweet, faintly aromatic, and devoid of the cherimoya flavor, but it is of good quality. (Adapted from Wester, *Philippine Agricultural Review*, third quarter, 1915.)

45572. PENNISETUM PURPUREUM Schum. Poaceæ. Napier grass.

From Rhodesia. Seeds presented by Mr. J. Burt Davy, Johannesburg, Union of South Africa. Received December 5, 1917.

"The great value of prolific and drought-resistant fodder plants, which are generally very difficult to procure, is well known to stock owners, and this species, which is but little known as yet, can be most highly recommended for both of these qualities. During the last season, which was very dry and most disastrous for stock, this grass grew to a height of nearly 11 feet and produced a large quantity of succulent, nutritious, and fattening fodder. This is greatly relished by the stock and is, according to analysis, much richer than green maize. A reliable official says: 'There is a consensus of opinion that in this plant we have found a fodder of great value and one which remains green even during such long periods as from six to eight months when other herbage is parched up or destroyed.' It grows rapidly to the height of 12 feet or more in favorable weather, thrives well in various soils, and resists both frost and drought to a remarkable extent. At a height of 7 feet it has produced 12 tons of green fodder per acre, and a few months later 15 tons, making a total yield of 27 tons per acre. It is everlasting when once established, and the tufts or stools increase in size after each cutting or when grazed off. It should prove of untold value to farmers in South Africa, who suffer much loss through frequent and protracted droughts, and in the East Indies and other countries where light rainfall and semiarid conditions obtain. As a prolific and drought-resistant plant it promises to prove one of the very best brought into cultivation." (B. Harrison.)

See S. P. I. No. 43241 for previous introduction.

45573. ARALIA CHINENSIS MANDSHURICA (Rupr.) Rehder. Araliaceæ.

From Jamaica Plain, Mass. Plants presented by the Arnold Arboretum. Received December 5, 1917.

This is a small hardy tree from Japan, resembling *Aralia spinosa* (Hercules'-club), but it is more treelike, has fewer spines, and does not sucker, which makes it a much more desirable lawn tree. It does not form many branches, but the large bipinnate leaves cast a good shade. The greenish white flowers are borne in large panicles. The berries are dark red when ripe, producing a very pleasing effect. Like all other aralias, *A. mandshurica* grows freely from pieces of root. (Adapted from *The Florists' Exchange*, November 6, 1915.)

45574. MEDICAGO SATIVA L. Fabaceæ. Alfalfa.

From Novelda, Alicante, Spain. Seeds presented by Mr. Elias Rizo. Received December 11, 1917.

45575 to 45578.

From the city of Guatemala, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 15, 1917. Quoted notes by Mr. Popenoe.

45575. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 216a. November 20, 1917.) A native species of *Crataegus*, well known in the Guatemalan highlands where it occurs both wild and cultivated. Seed previously sent in under No. 32a (S. P. I. No. 43430).

"The manzanilla is a large shrub or small, erect, slender tree about 20 feet tall, sometimes having a thick trunk a foot or more in diameter at

45575 to 45578—Continued.

the base, but never developing to a great height. In spring it produces white flowers resembling apple blossoms. In early fall, commencing about October, the fruits ripen, and from this month are abundant in all the markets until after Christmas. They are much used for decorative purposes, after being strung on long threads. They are eaten in several ways, principally stewed and in the form of jelly. For stewing they are first boiled with wood ashes, after which the skin is easily removed; they are then placed in hot sirup and boiled for a short time. Their flavor somewhat suggests that of the apple and is very pleasant.

"The fruits look like small apples, being nearly spherical, yellow with russet dots and a blushed cheek, and having a slender stem. The largest ones are $1\frac{3}{4}$ inches in diameter. The ordinary size is about 1 inch. The thin skin surrounds a rather dry, yellowish, mealy pulp and three large seeds. The plant is easily grown and should succeed in California and Florida."

45576. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

"(No. 217a. November 22, 1917.) Seeds from exceptionally fine cherimoyas, the largest ones weighing more than 4 pounds. These were purchased at the market in the city of Guatemala. It seems worth while to grow these seeds and bring the trees into fruit, in the hope that choice varieties may be obtained. They should be tested in southern California."

45577. *BURSERA* sp. Balsameaceæ.

Copal.

"(No. 218a. November 22, 1917.) One of several species which furnish the copal gum so extensively used in Guatemala as incense. The burning of this incense in religious ceremonies is a custom which has come down from the earliest times and is still practiced, mainly by the Indians. The gum is obtained by making incisions in the bark of the tree, which is rather small in size and is common in the highlands, both wild and cultivated."

45578. *DAHLIA POPENOVII* Safford. Asteraceæ.

Dahlia.

"(219a. November 22, 1917.) Collected near Santa Maria de Jesus, Department of Sacatepequez, at an altitude of about 6,800 feet.

"This species is common in the region around the city of Guatemala and as far north as the Chuacus Mountains. It has been seen as high as 7,000 feet and as low as 5,000, but is most common between 6,000 and 6,500, frequently in open places along the roadsides and ravines. The plant grows about 4 feet high. It flowers abundantly during September and October, the flowers being 2 to 3 inches broad, with 8-ray florets. The latter are all infertile, long and slender in form, and orange-brown to crimson in color. This species is of interest to those engaged in breeding or studying the cultivated dahlias. Mr. W. E. Safford considers it the probable ancestor of the cultivated cactus dahlias."

45579. *PSIDIUM FRIEDRICHTHALIANUM* (Berg) Niedenzu. Myrtaceæ.

Costa Rican guava.

From Matania el Saff, Egypt. Seeds presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received December 18, 1917.

"This is a very sour but very aromatic guava which might be used in addition to other fruits. It is medium sized, yellow, with yellow flesh. The glossy

red-stalked leaves are in two rows on the pendulous twigs. This tree is a shy bearer in Egypt, probably on account of the heat and the dry air." (*Bircher*.)

45580. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

From the city of Guatemala, Guatemala. Seeds collected by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917.

Avocado seeds introduced for stock purposes.

45581. IRIS ORIENTALIS Mill. Iridaceæ.

Iris.

(*I. ochroleuca* L.)

From Bellingham, Wash. Bulbs presented by Mr. C. T. Canfield. Received December 20, 1917.

"A species from high table-lands of Turkestan. I admire it more for foliage effect. It delights in stiff clay loam." (*Canfield*.)

One of the largest of the irises. The plants grow in strong clumps; the leaves are 2 to 3 feet long, 1 inch or more broad, and slightly glaucous. The stem is 3 feet tall, stout, terete, about as long as the leaves, with two to three spicate clusters of flowers, the outer segments of which are obovate, 1 inch broad, as long as the claw, yellow, paler or white toward the margin, and the inner segments oblong, 1 inch broad, lemon yellow to whitish. It grows in almost any situation. Native to Asia Minor and Syria. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 3, p. 1678.)

Received as *Iris gigantea*.

45582 and 45583.

From Madrid, Spain. Seeds presented by the director of the Botanic Garden. Received December 11, 1917.

45582. CONVULVULUS SCAMMONIA L. Convolvulaceæ.

Scammony.

The plant has a large, tapering, fleshy root, 3 to 4 feet long, 9 to 12 inches in circumference, and abounding in a milky juice. It is this juice, in a concentrated form, which constitutes the drug called scammony. In its medicinal action scammony is a violent purgative and is therefore seldom used except along with other cathartics, by which its action is mitigated and theirs promoted. Native to Syria and the Levant. (Adapted from *Hogg, Vegetable Kingdom*, p. 536.)

45583. PARIETARIA OFFICINALIS L. Urticaceæ.

A bushy plant from 12 to 18 inches high, with reddish brittle stems, oblong-ovate dull-green leaves, and tufts of small greenish flowers in the axils of the upper leaves. It is sometimes used as a potherb. While the ashes of the plant are said to contain a quantity of niter, its medicinal properties are almost negligible. The proportion of potassium nitrate which it contains is really too inconsiderable to enter seriously into account; nevertheless, it passes for an emollient and diuretic and as such has sometimes been prescribed in diseases in which inflammation is to be reduced. (Adapted from *Lindley, Treasury of Botany*, p. 846; *National Standard Dispensatory*, p. 1613; and *Heraud, Dictionnaire des Plantes Medicinales*, p. 458.)

45584. LILIUM sp. Liliaceæ.**Lily.**

From Soochow, China. Seeds presented by Prof. N. Gist Gee, Soochow University. Received December 12, 1917.

Introduced for bulb-culture experiments by Department of Agriculture officials.

45585. VITIS VINIFERA L. Vitaceæ..**Grape.**

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received December 18, 1917.

A hybrid between the *Cabernet* and *Cot* varieties of the common European grape, produced at the Botanical Station at Algiers.

45586 and 45587.

From Kingmen, Hupeh Province, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received November 16, 1917. Quoted notes by Mr. Meyer.

45586. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

"(No. 2446a. September 1 to 8, 1917.) About 20 pounds of seeds of a cultivated variety of Chinese pear, called *Chia t'ang li* (domestic crab-apple pear). This variety exists in several forms, ranging in size from that of a cherry to a small-sized hen's egg; in shape from flattened globular to pyriform; in color from greenish yellow to russet brown; in taste from somewhat astringent sour to mealy sweet, while some have a decided *Sorbus* afterflavor. They are all covered with a multitude of small specks and have a deciduous calyx. The trees are very productive, some branches breaking under the load of small fruits which occur singly, in pairs, and in bunches of three to six.

"They are almost all perpetuated by grafting upon the wild *Calleryana* pear which occurs along edges of rice fields. It is said that seedlings from this domestic *Calleryana* pear are not as vigorous and not as well suited for stock purposes as the real wild type. This, however, will have to be confirmed by actual experiment, as will its resistance to blight.

"Some groves of these pears should be planted for seed-bearing purposes in localities where no late spring frosts occur. All seedlings raised should be inoculated, to weed out possible nonimmune types."

45587. PTEROCARYA STENOPTERA DC. Juglandaceæ.

"(No. 2447a. September 5, 1917.) An ornamental tree, belonging to the walnut family, growing to a large size. The foliage is pinnate and of fresh green color. In early spring, before the leaves are out, the trees are loaded with long greenish brown, staminate catkins which give them a festive appearance; these are followed by racemes of small winged fruits which persist on the trees until September. The young foliage is covered with small yellow-brown glands and when rubbed smells like sour apples.

"The trees love moist situations, especially near running water and in porous soil; however, they also thrive on dry fields, but do not grow so fast nor so large as when near water. It is one of the best flowering trees in the foreign concessions at Hankow and Shanghai, and is called by foreigners the Chinese ash on account of its resemblance to a *Frax-*

45586 and 45587—Continued.

inus. Chinese name *Ma liu shu* (fiber willow tree), often abbreviated to *liu shu*.

"This is a very promising shade tree for streets, parks, and gardens in those sections of the United States where the summers are moist and warm and the winters but moderately cold. It does well where rice and cotton mature fully and where the large-leaved privet (*Ligustrum lucidum*) and the tea olive (*Osmanthus fragrans*) remain out of doors the year round."

45588. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

From Kuling, Kiangsi, China. Seeds presented by Rev. John Berkin. Received December 13, 1917.

The *yang-tao*, as this deciduous climber is known in Szechwan Province where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits and the ornamental value of the plant. Single plants often grow 30 feet in length, so that the vine will cover large areas of trellis. The leaves have a plushlike texture and an unusual dark-green color. The young shoots are bright pink and villous pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff yellow to white, fragrant, and of large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant and enhances its value as an ornamental.

Fruits abundantly produced, ovoid to globose, 1 to 2½ inches long, 1 to 1½ inches across; epicarp membranous, russet brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own.

The fruit is excellent when fresh and also makes very fine jam and sauce. Full information is lacking in regard to the fruit grown outside of China; some fruits received from California, however, bear out the high praise given the fruit by travelers. While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter. (Adapted from Fairchild, *Some Asiatic Actinidias*, Bureau of Plant Industry Circular No. 110, *Miscellaneous Papers*.)

45589 to 45591. LIVISTONA spp. Phœnicaceæ. Palm.

From Buitenzorg, Java. Seeds presented by the director of the Botanic Garden. Received November 30, 1917.

45589. LIVISTONA SUBGLOBOSA (Hassk.) Mart.

This palm differs from *Livistona olivaeformis* in its longer, more graceful rachis and less deeply cut lacinations of the leaves. The fruits are solitary or in twos or threes, subglobose, blackish violet. (Adapted from Hasskarl, *Tijdschrift voor Natuurlijke Geschiedenis en Physiologie*, vol. 9, p. 177.)

45590. LIVISTONA ALTISSIMA Zoll.

A palm with graceful trunk two-thirds of a foot in diameter and 80 feet or more tall, with globose fruits about the size of small cherries. The natives value the exceedingly hard wood very highly and use it especially for rafters, which last for three generations. (Adapted from Zollinger, *Natuurkundig Tijdschrift voor Nederlandsch Indië*, vol. 14, p. 150.)

45589 to 45591—Continued.

"An East Indian palm 20 to 30 feet in height, with a thick, round crown, commonly met with throughout Assam, but most plentiful in the Nowgong District. The leaves are in universal use throughout Assam for covering the tops of doolees (palanquins) and the roofs of boats, also for making the peculiar umbrella hats (jhapees) of the Assamese. For all these purposes the leaves are admirably adapted by their lightness, toughness, and durability. The leaves are similarly employed by the Lepchas for thatching and umbrellas." (*Watt, Dictionary of the Economic Products of India*, p. 86.)

45592 and 45593.

From Kingmen, Hupeh Province, China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917. Quoted notes by Mr. Meyer.

45592. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

"(No. 2453a. October, 1917.) Over 100 pounds of seed of a small-fruited wild pear which has proved to be highly resistant but not totally immune to fire-blight in the inoculation experiments of Prof. F. C. Reimer, at Talent, Oreg. This pear grows in a variety of habitats, as at edges of ponds, in dense thickets, on rocky mountain slopes, in crevices, etc. It is used by the Chinese as a stock for improved pears and seems to make a good union. When left alone it grows into a large tree, reaching an old age. Where this pear occurs around Kingmen, *Pyrus betulæfolia* also is found, and since the latter resembles *P. calleryana* to a striking degree, it is impossible when collecting a large number of fruits to keep out the first entirely. A certain percentage of seed of this pear therefore is mixed with the true *P. calleryana* pear.

"As *P. betulæfolia* is highly susceptible to blight, roguing in the seed beds or nursery plantings should be carefully done.

"To insure pure seeds for future stock purposes, groves should be set out here and there away from other species and varieties of pears, so as to minimize hybridization, and in localities where spring frosts are of rare occurrence.

"Where *Pyrus calleryana* occurs wild, one finds it associated with *Ligustrum lucidum*, *L. quihoui*, *Pistacia chinensis*, *Xylosma racemosum*, *Celtis sinensis*, *Ulmus parvifolia*, *Ziziphus jujuba*, *Pinus massoniana*, *Vitex negundo*, *Cudrania tricuspidata*, *Phyllostachys* sp., *Poncirus trifoliata*, *Zanthoxylum alatum*, etc. In gardens with it one finds cultivated *Citrus ichangensis*, *C. grandis*, *C. nobilis*, *Osmanthus fragrans*, *Meratia praecox*, *Prunus pseudo-cerasus*, *Hovenia dulcis*, *Eriobotrya japonica*, *Paulownia tomentosa*, and others.

"The fruits of *Pyrus calleryana* when ripe become soft and assume a brown color, while those of *P. betulæfolia* also become soft but turn quite black. When not soft, however, the fruits of the two species can not be separated when once mixed unless there are leaves attached to them. Chinese name *Yeh T'ang li* (wild crab-apple pear)."

45593. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ. **Chinese pistache.**

"(No. 2454a. October, 1917.) Over 200 pounds of seeds of the Chinese pistache, a very promising shade tree for those sections of the

45592 and 45593—Continued.

United States where the summers are warm and the winters but moderately cold. The young leaves are carmine red and the fall foliage gorgeously scarlet and yellow. The wood, which is very heavy and not often attacked by insects, is employed in the manufacture of furniture. From the seeds an oil is obtained which is used for illuminating purposes. The young expanded foliage buds are sparingly eaten boiled, like spinach. The staminate trees invariably grow larger and more symmetrical than the ones that bear the pistillate flowers. Chinese name *Huang lien shu*."

45594 and 45595.

From Chi Kung Shan, Honan Province, China. Seeds collected by Mr. G. D. Schlosser and sent by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received December 19, 1917.

45594. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

For description, see S. P. I. No. 45592.

45595. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

Seed of wild Chinese peaches introduced for experimental purposes.

45596 and 45597. LITCHI CHINENSIS Sonner. Sapindaceæ.

(*Nephelium litchi* Cambess.)

Lychee.

From Canton, China. Purchased from Mr. C. O. Levine, Agricultural Department, Canton Christian College. Received December 19, 1917.

45596. Variety *Hak ip* (black leaf).

45597. Variety *Kwai mi*.

45598 to 45604.

From the British West Indies. Seeds presented by Dr. O. L. Fassig, Weather Bureau, United States Department of Agriculture. Received October 15, 1917.

45598. *ORYZA SATIVA* L. Poaceæ.

Rice.

From St. Lucia.

45599. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From St. Lucia.

45600 and 45601. *GOSSYPIUM BARBADENSE* L. Malvaceæ.

Cotton.

45600. Sea Island cotton from the experimental station at King's Mount, St. Croix, developed by Dr. Longfield Smith, director, who presented this seed to Dr. Fassig.

45601. *Anna's Hope No. 1.* Variety of Sea Island cotton developed at the experimental station at King's Mount, St. Croix, by Dr. Smith, who presented this seed to Dr. Fassig.

45602. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

(Trinidad, British West Indies, July 31, 1917.) Seeds presented to Dr. Fassig by Mr. J. B. Rorer.

"A very nice salad bean which is commonly grown here and known as the 'Seheult' bean. It is a climber and is very prolific." (Rorer.)

45598 to 45604—Continued.**45603 and 45604. RHEEDIA LATERIFLORA L. Clusiaceæ.**

(Trinidad, British West Indies, July 31, 1917. Seed presented to Dr. Fassig by Mr. J. B. Rorer.)

"The hatstand tree is a name which is said to be given to *Rheedia lateriflora*. It is common in the woods of Trinidad and is noted for its regular branching character when young. A small tree of 8 or 10 feet will often have as many as 20 or more branches of even size thrown out at regular and close intervals, at an angle of 45 degrees from the main stem. It is frequently cut, placed in a heavy base, and used as a hatstand; and when shortened into a pyramidal form and nicely trimmed and polished, it serves exceedingly well for the purpose." (*J. R. Jackson, The Garden, July 25, 1903.*)

45605. POLYGONUM TINCTORIUM Lour. Polygonaceæ.

From China. Seeds collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received October 6, 1917.

"(No. 2443a. Hankow, China. June 14, 1917.) An annual herb, much cultivated throughout northern and central China for the blue dye it produces, which, however, fades easily. It is sown on rich lands toward the end of February, and the first cutting is made during June, and a much smaller one during August. Farther north the sowing takes place later and but one cutting can be obtained. To procure the dye material the plants are deposited in plastered pits, water is poured over them, and they are allowed to decay for several weeks; then the stems are taken out and the water is allowed to evaporate. When at last the slimy mass in the pit has become sufficiently dry, quicklime is added and thoroughly mixed, and the material is allowed to dry out until it can be well worked. It is then taken out and kept in tubs, barrels, and other vessels until needed for dyeing. The freshly dyed cloth possesses a most unpleasant odor which can often be detected for a considerable distance. Gradually, however, the wind takes away the odor and the cloth can then be made into garments. The dye seems to be used almost exclusively for the dyeing of coarse cotton cloth. Chinese name of the plant *Liao lan*." (*Meyer.*)

45606. PYRUS BETULAEFOLIA Bunge. Malaceæ.**Pear.**

From Jamaica Plain, Mass. Seeds presented by the Arnold Arboretum. Received November 28, 1917.

A slender, quick-growing, graceful tree, 20 to 30 feet high, with gray-felted young branches and round-ovate, long-pointed, coarsely toothed, lustrous leaves. The white flowers, three-fourths of an inch across, are borne in clusters of 8 to 10 and are followed by grayish brown, white-dotted fruits the size of peas. The Chinese use this species as a stock for the larger fruited pears. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles, vol. 2, p. 279.*)

45607. SMILAX sp. Smilacaceæ.**Sarsaparilla.**

From Kingston, Jamaica. Roots presented by Mr. W. Harris, Hope Gardens, Department of Agriculture. Received December 20, 1917.

This plant is used in Jamaica as a source of the sarsaparilla of commerce.

45608 and 45609.

From Cienfuegos, Cuba. Seeds presented by Mr. R. M. Gray, Harvard Experiment Station. Received December 18, 1917.

45608. CAMOENSIA MAXIMA Welw. Fabaceæ.

This vine, which adorns the tops of lofty trees in tropical Africa, bears probably the largest and most beautiful flowers of any plant in the world. These deliciously fragrant flowers, sometimes 8 inches in length, have petals of pure white margined with gold which becomes darker with age; they are borne in pendulous clusters of nearly a dozen individuals. The 3 to 4 seeded pod is 6 to 8 inches long, nearly straight and clothed with ferruginous woolly tomentum. The leaves are digitately trifoliate, the leaflets obovate-oblong, 5 to 6 inches long. One drawback to the cultivation of this plant is that it has been so extremely slow in coming into bloom, blooming only in hothouses of considerable size. Regarding the possibilities of this plant in the United States, Mr. George W. Oliver states: "Very likely this plant will flower oftener and more profusely in this country than in Europe, particularly England because of our higher summer temperature, which enables the plant to grow rapidly and ripen its wood." (Adapted from *The Garden Magazine* vol. 7, p. 229, and *Oliver, Flora of Tropical Africa*, vol. 2, p. 252.)

45609. GOSSYPIUM BARBADENSE L. Malvaceæ.**Cotton**

"Native tree cotton, called purple cotton by the natives." (Gray.)

45610. CHENOPodium AMBROSIoidES L. Chenopodiaceæ.

From Bahia, Brazil. Seeds procured by Mr. Edward Higgins, American consul at Bahia. Received December 20, 1917.

Known in Brazil as *hera de Santa Maria* or *Mastruz*. A viscid glandular rankly smelling perennial herb, native to tropical America, but widely naturalized and growing abundantly in North America, especially in the eastern United States, as a coarse weed of the roadside and waste places. Its medicinal importance is due to the volatile oil which it contains. A very active anthelmintic is obtained when the bruised fruit or the expressed juice of the plant is used. It is frequently employed for the expulsion of lumbricoid worms especially in children. (Adapted from *The National Standard Dispensatory* p. 402.)

45611. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane**

From Trinidad, British West Indies. Seeds presented by the St. Clair Experiment Station, Department of Agriculture. Received December 21, 1917.

"*Louisiana 511*. One of the sugar-cane seedlings tested in 1908 at the Louisiana Sugar Experiment Station at Audubon Park, New Orleans; it is particularly noteworthy because of the unusually high sucrose content (16. per cent) for Louisiana conditions. The parent cane was *Trinidad 189*." (H. I. Agee, *Louisiana Bulletin* No. 127, May, 1911.)

45612. PYRUS MAMORENSIS Trabut. Malaceæ.**Pear.**

From Rabat, Morocco. Seeds presented by Commandant de Beaucoudrey, Inspector of Forests, at the request of Dr. L. Trabut, Algiers, Algeria. Received December 22, 1917.

"Seeds of a Moroccan pear which occurs with the cork oak in the forest of Moroccan Mamora. It is very resistant to dryness in the sandy noncalcareous soils. The vigorous tree will probably form a good stock. The fruit is rather large, and the seeds are very large." (Trabut.)

45613 and 45614. PASSIFLORA spp. Passifloraceæ. **Granadilla.**

From Caracas, Venezuela. Seeds presented by Mr. H. Pittier. Received December 26, 1917.

45613. PASSIFLORA sp.

Possibly a hybrid between *Passiflora edulis* and *P. maliformis*, as the seeds do not agree with either, although somewhat resembling each.

45614. PASSIFLORA LIGULARIS Juss.**Sweet granadilla.**

"Unquestionably one of the best of the granadillas. In Guatemala it is common at altitudes of 4,000 to 7,000 feet, but I have never seen it in the lowlands; it appears, therefore, that it is adapted to subtropical climates and, judging from its presence in portions of Guatemala almost too cold for the avocado, I feel that it ought to succeed in California. The behavior of other species, such as *Passiflora edulis*, in that State indicates that conditions in general are favorable to the passifloras, and the question has generally been one of hardiness. Many species tested in California have proved to be too tender. *P. ligularis*, with slight protection during the first winter or two, certainly ought to thrive in the southern half of the State.

"In Guatemala it is a rampant climber, scrambling over trees and buildings and covering them with a canopy of green. It goes to the tops of trees 35 or 40 feet in height. Its foliage is bold, the large cordate leaves being as much as 6 or 8 inches in length.

"The ripening season commences in early fall and extends through the winter. Large plants bear abundantly, yet I have never seen a vine so laden with fruits as some of the plants of *Passiflora edulis* which grow in California gardens. The fruits are commonly 2½ inches in length and deep orange-yellow in color. Sometimes a purple-fruited variety is seen. The brittle outer shell or pericarp, when broken away at one end, exposes the small elliptic seeds individually inclosed in a juicy, white aril. The aroma of the fruit is delightful; it may properly be termed perfumed. The flavor is equally pleasant and, unlike many other passifloras, is not unduly acid. The fruit is commonly eaten out of hand, for which mode of use it seems best adapted. One can consume a large number of them without any ill effects.

"The fruits are often brought into the markets of Guatemala upon the backs of Indians from distances of a hundred miles. The pericarp is so tough that it is not easily bruised, hence the fruit can be transported without difficulty. It is attractive in appearance and so popular in Guatemala that it realizes higher prices in the markets than most other fruits which compete with it.

"The term granadilla (diminutive of granada, Spanish for pomegranate) is applied in tropical America to the fruits of various passi-

45613 and 45614—Continued.

floras. It is an attractive name, and it seems desirable to retain it; but an additional word is necessary to distinguish between the various species. The one under consideration might well be called the sweet granadilla." (*Wilson Popenoe.*)

For an illustration of a granadilla fruit, see Plate IV.

45615 and 45616.

From Manila, Philippine Islands. Seeds presented by Mr. Adn, Hernandez, Director of Agriculture. Received December 26, 1917.

45615. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

Patani. "A perennial twining vine of vigorous growth, commonly cultivated as an annual, of wide distribution, and in general cultivation; grown on a trellis, arbor, or bamboo poles for support. Indigenous to tropical America. There are at least seven distinct 'native' forms, of which the white-seeded varieties are the best for culinary uses; the colored or variegated beans should be boiled and the water changed two or three times to render them wholesome." (*Wester, Food Plants of the Philippines, p. 176.*)

45616. LANSIUM DOMESTICUM Jack. Meliaceæ.**Langsat.**

"This, like the mangosteen, is a delicious oriental fruit not yet well established in America. While it is not so famous as the mangosteen, it is highly esteemed throughout the Malayan region and is praised by many travelers. To judge from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West Indies and other parts of the American Tropics, but I have yet to hear of its fruiting outside the Orient. The langsat has two allies in America: One, the well-known umbrella tree (*Melia azedarach*) of the United States; the other, the tropical mahogany (*Swietenia mahagoni*). The genus *Lansium*, to which the langsat belongs, is a small one; and this species is the only one cultivated for its fruit. The duku, a fruit closely resembling the langsat, is commonly considered a botanical variety of *Lansium domesticum*.

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets three or four inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh which separates into five segments. The flavor is highly aromatic, at times slightly pungent; each segment of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways.

"The name lanzon is applied to this fruit in the Philippine Islands, langsat or lanseh being the form used in the Malay Peninsula." (*Wilson Popenoe.*)

45617 and 45618.

From Buitenzorg, Java. Seeds presented by Mr. P. J. S. Cramer, chief, Plant-Breeding Station. Received December 26, 1917.

45617. CROTALARIA USARAMOENSIS Baker f. Fabaceæ.

An herbaceous plant used in Java for green manuring. Leaves compound, remote; leaflets narrow elliptical, apex subacuminate, base cuneate, 4 to 6 centimeters long, 10 to 16 millimeters wide; stipules none. Flowers pedicillate, numerous, in elongate terminal racemes. (Adapted from *Baker, Journal of the Linnean Society, p. 346.*)

45618. MIMOSA INVISA Mart. Mimosaceæ.

A plant which is used in Java for green manuring. The stems are prostrate or ascending, the foliage sensitive to the touch. The flowers are described as rose colored. The species is distributed from Mexico to central Brazil. (Adapted from *Micheli, Flore du Paraguay, p. 59.*)

45619 to 45622.

From Concepcion, Paraguay. Seeds presented by Mr. Thomas R. Gwynn. Received December 27, 1917.

45619. DIOCLEA REFLEXA Hook. f. Fabaceæ.

Ornamental, woody, climbing plant, up to 20 feet in length, with compound leaves composed of three thickish leaflets and rather dense racemes (4 to 6 inches long) of red flowers. The broad-oblong leathery pod, 3 to 4 inches long, is densely covered with yellowish gray silky hairs. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 189.*)

45620. HOVENIA DULCIS Thunb. Rhamnaceæ. Raisin tree.

An ornamental, deciduous Japanese tree with leaves often 4 to 5 inches long and white or greenish white flowers that make little display. After flowering, the peduncles thicken and become edible, being red, pulpy, and of sweetish taste. Strange as it may seem, the thickened reddish peduncles form the main attraction of the inflorescence. Successfully propagated by cuttings of soft wood under glass. (Adapted from *The Florist's Exchange, January 22, 1916.*)

45621. SCHIZOLOBIUM PARAHYBUM (Vell.) Blake. Cæsalpiniaceæ.
(*S. excelsum* Vog.)

A very large, quick-growing tree, up to 120 feet in height; native of Brazil. The fine leathery leaves are bipinnate. The bright-yellow flowers are borne in large erect racemes during February or March when the tree is quite bare of leaves. The flowers are at once followed by beautiful young foliage. It thrives up to 1,500 feet altitude in the moist region of Ceylon. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, 2d ed, p. 300.*)

45622. TIPUANA TIPU (Benth.) Lillo. Fabaceæ. Tipu.
(*T. speciosa* Benth.)

Ornamental, unarmed tree for the extreme southern United States. Flowers yellow, showy, in loosely branched terminal panicles; standard broadly orbicular, wings very broadly half-ovate, much longer than the keel; leaves unevenly pinnately compound, leaflets 11 to 21, oblong, entire; pod stipitate, indehiscent, 1 to 3 seeded, samaralike. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 6, p. 3351.*)

45623. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Deming, N. Mex. Seeds presented by Miss Ruth I. Grover. Received December 27, 1917.

"These beans were found in an old Aztec Indian grave in old Mexico in 1916. They are of the bush variety and I believe very hardy if irrigated." (*Miss Grover.*)

A bean with a twining stem which, if supported, will rise to a height of 14 feet. The leaves are smaller than those of the common kidney bean, and the flowers, which are in long spikes and of a deep scarlet color, are larger. The pods are large and rough, and the seeds are purple marked with black, although sometimes pure white. This bean was formerly cultivated for its flowers only, and was first mentioned as being edible by the gardener, Philip Miller. (Adapted from *Miller, Gardeners' and Botanists' Dictionary, 9th ed.*)

This is a white-seeded form.

45624. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

From Canton, China. Purchased from Mr. C. O. Levine, Agricultural Department, Canton Christian College. Received December 11, 1917.

"Cuttings from trees of variety *Wai Chie* growing on the college campus." (*Levine.*)

45625 to 45658. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ.
(*Z. jujuba* Lam. not Mill.)

From Port Louis, Mauritius. Seeds presented by Mr. G. Regnard. Received December 19, 1917.

Thirty-four varieties received. The following is an extract from a letter from Mr. Regnard:

"If the *Ziziphus* trees are not cultivated in the strict sense of the word, they are to be found in large numbers in the villages inhabited by Indians and Africans in the warmer localities of the island. The fruits are well appreciated, not only by these people but also by Europeans, and are sold in great quantities in the fruit markets during June, July, and August (the cold season). On having fruits gathered from different trees, I have noticed that there are many varieties, probably more than one hundred, of different size, shape, taste, and color. The fruits on ripening may be green, pink, red, or yellow. The majority is of a certain shade of yellow. When overripe, that is, when the fruit softens, all the fruits have the same uniform yellowish brown color.

"The fruits are eaten before they become what I call 'overripe,' and except for some varieties have a very good taste. Usually those fruits which have the lower extremity slightly pointed are considered to be the best, but this is not always the case.

"The tree rarely attains more than 20 feet in height, with a trunk 6 to 8 inches in diameter. It grows all around the island, from sea level to 500 or 600 feet altitude; but it appears, save a few exceptions, that the best products are obtained from the regions where the heat is more regular, because they are sheltered from the winds which blow from the southeast during most of the year."

45625 to 45658—Continued.

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| 45625. 1. | 45632. 8. |
| 45626. 2. | 45633. 9. |
| 45627. 3. | 45634. 10. |
| 45628. 4. | 45635. 11. |
| 45629. 5. | 45636. 12. |
| 45630. 6. | 45637. 13. |
| 45631. 7. | 45638. 14. |
| 45639. 15. "Seeds of a small fruit, long and pointed, excellent to eat."
(<i>Regnard.</i>) | |
| 45640. 16. "A variety with very large fruits, pointed at the lower end,
and of most excellent flavor." (<i>Regnard.</i>) | |
| 45641. 17. | 45650. 26. |
| 45642. 18. | 45651. 27. |
| 45643. 19. | 45652. 28. |
| 45644. 20. | 45653. 29. |
| 45645. 21. | 45654. 30. |
| 45646. 22. | 45655. 31. |
| 45647. 23. | 45656. 32. Large-fruited variety. |
| 45648. 24. | 45657. 33. Large-fruited variety. |
| 45649. 25. | 45658. 34. Mixed varieties. |

45659. *CASUARINA SUMATRANA* Jungh. Casuarinaceæ.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received December 31, 1917.

"Introduced as a better form of *Casuarina*, forming a larger and more graceful tree than *Casuarina equisetifolia*, which is so commonly used as a street tree in Florida." (*Fairchild.*)

45660. *MIMUSOPS KAUKI* L. Sapotaceæ.

From Lawang, Java. Seeds presented by Mr. M. Buysman. Received
December 29, 1917.

The genus *Mimusops* is composed of handsome evergreen trees which are cultivated in the Tropics for perfumery, oil, rubber, and other products. This species grows 20 to 35 feet in height, is native to the Malay Peninsula, and is cultivated in the West Indies. The young branches are gummy; the long-petioled leaves, 4 inches in length, are crowded at the ends of the branches; the flowers are clustered on twin or solitary pedicels; and the fruit is an obovoid, smooth berry, up to 1 inch in diameter, and usually four seeded. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2056.)

45661. *PRUNUS SERRULATA* Lindl. Amygdalaceæ.

Flowering cherry.

From Jamaica Plain, Mass. Cuttings presented by the Arnold Arboretum.
Received November 16, 1917.

This cherry is well known in our gardens and nurseries in its double forms, which are grown under various names. These double-flowered forms vary in the size of the blossoms and in the depth of the rosy tints that suffuse the

petals. Although 80 years have passed since the first plants were introduced, it would be difficult even now to name a more beautiful or desirable flowering tree. Perfectly hardy, easily accommodated, and never failing at the flowering time, the species combines in itself almost all the qualities that one asks for in an ornamental tree.

Of the new single-flowered varieties not much can yet be said, but although so different from the big double blossoms to which we are so accustomed, the flowers possess all their charm and delicacy of color, and if they are not so large they have an even daintier gracefulness. (Adapted from *The Garden*, vol. 56, p. 300.)

This is apparently the variety *Ochichima*, a form with pale-pink, double flowers of large size. (See *Wilson, Cherries of Japan*, p. 54.)

45662. AMYGDALUS PERSICA L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

From Guadelope, French West Indies. Scions presented by Mrs. E. St. George Lough, Trois Rivières Plantation. Received December 31, 1917.

Peach scions imported for experimental purposes.

A freestone peach described as somewhat resembling the peen-to peach in shape and flavor. It is round, however, not flattened, and is reported as being larger and having more "perfume and savor" than the peen-to. It resists decay well, even in the heat of the French West Indies.

For a more complete description, see S. P. I. No. 34131.

45663. STADMANNIA OPPOSITIFOLIA Lam. Sapindaceæ.

From Port Louis, Mauritius. Seeds presented by Mr. G. Regnard. Received December 7, 20, 22, and 31, 1917.

"The fruits make an excellent jelly, very much like that of the quince. This tree grows in a wild state, and the pulp of its fruit, unless made into a jam or jelly, is only fit to be eaten by monkeys." (*Regnard*.)

A large hardwood tree, once frequent in the primeval forests of the island of Mauritius, but now becoming scarce. It has alternate pinnate leaves, dense panicles of inconspicuous flowers, and hard spherical fruits nearly an inch in diameter. (Adapted from *Baker, Flora of Mauritius*, p. 60.)

45664 to 45669.

From Zacuapam, Vera Cruz, Mexico. Presented by Dr. C. A. Purpus. Received December 31, 1917.

45664. CHAYOTA EDULIS Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.)

Chayote.

"The chayote is becoming known in the United States as a useful vegetable belonging to the squash family. In some parts of tropical America it is eaten as commonly as are the potatoes in North America and is stewed with meat, creamed, and so on, in the same manner. It has not the food value of the potato, but is more comparable in this respect to the squash. In an effort to extend and improve its culture in this country, varieties are being introduced from as many regions as possible." (*Wilson Popenoe*.)

45665. CAPSICUM ANNUUM L. Solanaceæ.

Pimento.

Var. *grossum*. The pimento of tropical America. Dr. Purpus states that this variety is a plant for a hot country and should be planted in a sunny place in light soil.

45664 to 45669—Continued.

45666. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. **Cherry tomato.**

Plants of the variety *cerasiforme*. It differs from the ordinary garden tomato in having small fruits, either red or yellow, and leaves which are smaller, grayer, and less dense. The fruits are used for pickles and preserves. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 1931.)

Introduced to test for wilt resistance.

45667 and 45668. VANILLA PLANIFOLIA Andrews. Orchidaceæ. **Vanilla.**

45667. "Cuttings of the true vanilla from Misantla, Mexico. Should be planted at the foot of small trees or shrubs, in leaf mold." (*Purpus.*)

45668. "From Zacuapam." (*Purpus.*)

45669. VANILLA POMPONA Schiede. Orchidaceæ. **Vanilla.**

"Plants of wild vanilla, which grows in brush woods and half-shady places in the low country at the limits of the tierra caliente. Should be planted at the foot of small trees or large shrubs, in leaf mold." (*Purpus.*)

"A native of Mexico, yielding an inferior quality of vanilla known by the name of 'Vanillon' and 'Vanilloes.' This is claimed to have advantages over proper vanilla, its pods not having a tendency to wilt, as well as being easily cured, whilst the vines are said to flower and fruit three or four times during the year." (*Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 282.)

45670 to 45691.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received November 16, 1917.

45670. CASTANEA HENRYI (Skan) Rehd. and Wilson. Fagaceæ.

Chestnut.

(Cuttings.) A tree, 75 to 100 feet in height, distributed through the valley of the Yangtze River as far west as Mount Omei. It is common in woods on the mountains of western Hupeh and eastern Szechwan. The leaves are green on both surfaces, caudate-acuminate, and broadest below or at the middle. The shoots are dark colored and quite glabrous. The fruit is usually a solitary nut. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 196.)

45671 and 45672. CORYLUS CHINENSIS Franch. Betulaceæ. **Hazelnut.**

(Cuttings.) A tree native to western China, which grows to a height of 120 feet. The ovate-oblong leaves are cordate at the base, doubly serrate, and 4 to 7 inches long. The fruit is borne in clusters of four to six. The involucre is constricted above the nuts, with recurved and more or less forked lobes. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 859.)

45671. Vilmorin No. 1200.

45672. Wilson No. 1453.

45673. CORYLUS HETEROPHYLLA SUTCHUENENSIS Franch. Betulaceæ.

Hazelnut.

(Cuttings.) A bush, 1 to 4 meters tall and widely distributed in China, having been reported from Szechwan, Hupeh, Kiangsi, and Hunan Provinces. The branches and petioles are sparsely pubescent. The

45670 to 45691—Continued.

involucres are deeply cleft and shorter than the very finely pubescent nutlets. There is a large variation in the involucres and in the pubescence of the leaves, petioles, and branches. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 455.)

45674. × *MALUS ARNOLDIANA* Rehder. Malaceæ.

(Roots.) A plant which is evidently a hybrid of *Malus floribunda* appeared spontaneously in the Arboretum several years ago and has been named *M. arnoldiana*. This plant promises to remain a smaller tree than *M. floribunda*, but its long, spreading, and arching branches are very graceful and the flowers produced on long stems are more than twice as large as those of its parent. The flowers of this interesting tree are considered by some persons more beautiful than those of any other crab apple. (Adapted from *Arnold Arboretum Bulletins of Popular Information*, Nos. 3 and 22.)

45675. *MALUS BACCATA MANDSHURICA* (Maxim.) C. Schneid. Malaceæ.

Crab apple.

(Roots.) *Malus baccata mandshurica* is the earliest of the crab apples to open its flower buds in the Arboretum. A native of Manchuria, Chosen (Korea), and northern Japan, it is the eastern form of the better known *Malus baccata*, the Siberian crab apple, which reached Europe more than a century ago and for a long time was one of only two Asiatic crab apples known in western gardens. The Manchurian form as it grows in the Arboretum is a tree 12 to 15 feet tall and broad; the flowers, which are produced in profusion, are pure white, rather more than an inch across, and more fragrant than those of any other Asiatic crab apple. The fruit is round, yellow or red, and not larger than a large pea. This crab apple, which is still rare in this country, for the fragrance of the flowers alone should find a place in all collections. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 5, p. 2871.)

45676. *MALUS FUSCA* (Raf.) C. Schneid. Malaceæ.

Apple.

(Roots.) A shrub or small tree, sometimes 30 to 40 feet tall, with ovate-lanceolate sharply serrate leaves. The white flowers, an inch in diameter, are borne on slender pubescent pedicels, and appear when the leaves are nearly or quite full grown. The fruit is oblong, three-fourths of an inch or less long, and yellowish or greenish in color. According to Sargent, this tree "grows usually in deep, rich soil in the neighborhood of streams, often forming almost impenetrable thickets of considerable extent, and attains its greatest size in the valleys of Washington and Oregon." The range extends from northern California to Alaska. (Adapted from *Bailey, Standard Cyclopedic of Horticulture*, vol. 5, p. 2875.)

45677. × *MALUS MAGDEBURGENSIS* Zimmerm. Malaceæ.

Apple.

(Roots.) *Malus magdeburgensis* is considered to be a hybrid between *M. spectabilis* and *M. dasyphylla*, which was found among a collection of trees planted in the city gardens of Magdeburg and supposed to have been originally imported from Japan. (Adapted from *Möller, Deutsche Gärtner-Zeitung*, vol. 20, p. 254.)

45670 to 45691—Continued.

45678. *MALUS NIEDZWETZKYANA* Dieck. Malaceæ. Apple.

(Roots.) One of the most curious apple trees in the collection, *M. niedzwetzkyana* has deep purplish red flowers and fruit, even the flesh being purple, leaves purple (at least early in the season), and dark bark. It comes from central Asia and is probably a form of *M. pumila*, one of the parents of the common apple tree, as seedlings raised in the Arboretum have sometimes purple but more often green leaves. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 22.*)

45679. *MALUS PRUNIFOLIA RINKI* (Koidz.) Rehder. Malaceæ. Apple.

(Roots.) It is a tree in its wild state with greenish yellow fruit, sometimes with a reddish cheek, or rarely entirely red, rather longer than broad and not often more than $1\frac{1}{2}$ inches in diameter; it is juicy and has an acid flavor. This tree was early introduced into Japan, where it was formerly cultivated in many forms as a fruit tree. Its cultivation in Japan was given up after the introduction of American and English apple trees and it is now a rare plant there. Judging by the climate where this tree grows naturally in western China, it should prove as hardy as the Siberian *Malus baccata*, which is one of the parents of the hardy race of apples now much cultivated in the extreme north as Siberian crabs; and it is not improbable that by crossing the Rinki with some of these hybrid crabs or with the hardiest varieties of the common apple a race may be obtained more valuable for the cold parts of North America than any of the apples which can now be grown in some of the Northern States and in the northwestern Provinces of Canada. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 3.*)

45680. *MALUS SYLVESTRIS* Mill. Malaceæ. Apple.

(Roots.) "A wild form of the cultivated apple secured in Turkestan." (Sargent.)

45681. *MALUS THEIFERA* Rehder. Malaceæ. Apple.

(Roots.) *Malus theifera* from central and western China is closely related to Hall's crab. It is one of Wilson's introductions through seeds sent in 1900 to Veitch and in 1907 to the Arboretum, where it is now 12 feet high. It has upright, spreading, rather zigzag branches which are densely studded with short spurs which bear numerous clusters of flowers rose red in the bud, becoming pale and almost white when fully expanded. In central China the peasants collect the leaves and from them prepare the palatable beverage which they call red tea. From this fact the specific name is derived. (Adapted from *Arnold Arboretum Bulletin of Popular Information No. 4.*)

45682. *MALUS TRANSITORIA TORINGOIDES* Rehder. Malaceæ. Apple.

(Roots.) This plant looks quite distinct from typical *Malus transitoria* with its larger, partly entire leaves and larger fruit and may turn out to be a distinct species, but as long as we do not know the mature fruits of the type and the flowers of this variety we must rely on the difference in the leaves, which is not sufficient for specific separation, as intergradations seem to exist. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 286.)

45670 to 45691—Continued.

45683. *PRUNUS MAACKII* Rupr. Amygdalaceæ.

(Cuttings.) A Manchurian bird cherry up to 40 or more feet high in a wild state, very distinct through the bark of the trunk being smooth and of a striking brownish yellow color, and peeling like that of a birch. It is different from ordinary bird cherries in the racemes coming on the year-old wood and from the laurels in being deciduous. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 241.)

45684. *PRUNUS SERRULATA* Lindl. Amygdalaceæ. Flowering cherry.

(Cuttings.) Forma *rosea* Wilson. Cultivated cherry which has been grown at the Arnold Arboretum. It was received from Spath in 1912 as *P. pseudo-cerasus shidaresakura* Koehne.

"Flowers rather small, inodorous, pink, and very double, known to me only as a cultivated plant in this Arboretum. It is fortunate that Koehne's name is a synonym, since in Japanese it signifies hanging cherry and in Japan is applied only to *P. subhirtella* var. *pendula* Tanaka." (Wilson, *The Cherries of Japan*, p. 27.)

45685. *PRUNUS THIBETICA* Franch. Amygdalaceæ. Plum.

(Cuttings.) An ornamental tree 15 to 20 feet in height, bearing oblong convolute leaves which have crenate margins. The bluish pink flowers appear with the leaves on pedicels one-third to three-fourths of an inch long. Native to western China, where it commonly grows in thickets. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2827.)

45686 and 45687. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.

(No. 556a Wilson.) This is a widely distributed species and, according to Wilson, is common in western Hupeh from river level up to 1,500 meters altitude. It has comparatively small glabrous crenate leaves and small flowers with two, rarely three, styles. The fruit is about 1 to 1.4 centimeters in diameter. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 2, p. 264.)

45686. Seeds.

45687. Fruits.

See also S. P. I. No. 45586.

45688. *PYRUS SERRULATA* Rehder. Malaceæ. Pear.

(Fruits.) A tree native to western Hupeh at altitudes from 600 to 1,600 meters.

"This species seems to be most closely related to *Pyrus serotina* Rehder, but differs chiefly in its serrulate, not setosely serrate, generally broader leaves and in the smaller flowers with usually three or four styles and shorter sepals, and in the smaller fruit." (*Sargent, Plantæ Wilsonianæ*, vol. 2, p. 263.)

45689. *RIBES FASCICULATUM CHINENSE* Maxim. Grossulariaceæ. Currant.

(Plants and fruits.) "In the shrub collection the leaves of two currants are just turning scarlet [November 1, 1912]. These are *Ribes curvatum* and the Chinese form of *Ribes fasciculatum*. The beauty of the Chinese currant at this season is increased by the bright-red fruits which are still on the branches. It is the only representative of the genus in the collection with fruit which ripens in the autumn and is

45670 to 45691—Continued.

well worth a place in every collection in which handsome autumn fruits are valued." (*Arnold Arboretum Bulletin of Popular Information* No. 34.)

45690 and 45691. *VITIS VINIFERA* L. Vitaceæ.

Grape.

45690. "Cuttings of a wild grape of the *vinifera* type from northern China." (*C. S. Sargent.*)

"This is a very hardy plant, enduring the winters of Boston, Mass., with little injury." (*Peter Bisset.*)

45691. (Plants.) "This grape is largely cultivated in Peking. There are white-fruited and purple-fruited varieties. In Peking the vines are laid down and covered in the winter; at the Arboretum they have so far generally proved hardy and have occasionally produced fruit. This vine may prove valuable to cross with some of the hybrids or varieties of American grapes." (*C. S. Sargent.*)

45692 to 45704.

From France. Scions presented by Mr. Edmond Versin, St. Jean le Blanc, par Orleans, Loiret. Received November 28, 1917.

45692 to 45701. *CORYLUS AVELLANA* L. Betulaceæ.

Hazelnut.

45692. *D'Alger*. This is a well-known hazelnut, and because of its many hundreds of years of cultivation it has received many different names. The bush is of low, much-branching habit, spreading widely by means of suckers. It is a very prolific shrub and is one of the most fruitful of all the varieties of hazelnut. The leaves are of medium size, roundish or oval-elliptic. The nut is medium sized, 20 to 22 millimeters long, and very long pointed. It seldom grows singly, but is found in groups of three to five. The shell is dark brown, later even becoming brownish black. The upper half is covered by a grayish woolly tomentum which becomes stronger toward the tip. The kernel, which has a sweet almondlike taste, is oval and entirely fills the shell. Blooms in midspring; ripens early, from the middle to the end of August, depending on the climate. Older pomological workers state that this nut comes true to seed, but more recent workers state that only about one-fifth of the seed planted comes true to the variety. It is a nut to be universally recommended. (Adapted from *Goeschke, Die Haselnuss*, p. 78.)

Received as *Corylus macrocarpa*.

45693. Received as *Corylus macrocarpa du Bearn*.

45694. Received as *Corylus macrocarpa fertile*.

45695. Received as *Corylus avellana folius aureis* (golden-leaved filbert).

45696. Received as *Corylus macrocarpa de Brunswick*.

45697. Received as *Corylus macrocarpa à coque tendre*.

45698. *Cob filbert*. "Involucre nearly smooth, longer than the nut, and very slightly cut around the margin; nut large, oblong, and somewhat compressed; shell rather thick, brown; kernel full and of very rich flavor. This is perhaps the best of all the filberts. The tree is a most abundant bearer. Some of the nuts are upward

45692 to 45704—Continued.

of an inch in length, and they have with care been kept for four years. It is only after being kept for some time that their full richness of flavor is obtained. Mr. Hogg says this nut was first brought to the notice of the Horticultural Society by A. B. Lambert about the year 1812. It is improperly called *Kentish Cob*. The true *Cobs* are roundish thick-shelled nuts." (*Thomas, The American Fruit Culturist*, p. 448.)

45699. Emperor. This variety was grown in England by Richard Webb, breeder in the Calcot Garden at Reading. A prolific bush of low but strong growth, with small to medium leaves, 9 to 10 centimeters long, round-oval, and narrowed toward the base. The nuts are conspicuously large, 20 to 22 millimeters long, of irregular shape, and grow singly or two or three together. The shell is light brown, with distinct dark-brown stripes, and is softly pubescent near the apex. The large kernel is broadly oval and of good flavor. Blooms rather late; ripens early, late August or early September. This is a very valuable nut which, because of its beauty and heavy bearing, is widely grown. (Adapted from *Goeschke, Die Haselnuss*, p. 60.)

Received as *Corylus macrocarpa*.

45700. Received as *Corylus macrocarpa à gros fruits*.

45701. Received as *Corylus macrocarpa des Anglais*.

45702. CORYLUS COLUMNATA L. Betulaceæ.

Turkish hazelnut.

The nuts of this species are small and somewhat flattened, with the deeply cut roundish involucre several times longer than the nut. The plant is treelike, with upright branches which are corky when young. The leaves are shiny, becoming broad and pointed as they mature. (Adapted from *Goeschke, Die Haselnuss*, p. 41.)

45703. CORYLUS MAXIMA Mill. Betulaceæ.

Hazelnut.

Received as *Corylus macrocarpa du Piemont*.

45704. POPULUS INCRASSATA Dode. Salicaceæ.

Poplar.

A dense tree of irregular habit of growth, with short ascending branches. The appearance of some of the leaves suggests the fossil species *Populus latior* Heer. The prefoliation is ragged, as in the group *Caroliniensis*. Habitat the western portion of North America. This is a species of doubtful validity. (Adapted from *L. A. Dode, Genre Populus*, p. 41.)

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Issued May, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1918.

(No. 54; Nos. 45705 to 45971.)



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BUREAU OF PLANT INDUSTRY.

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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

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P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Gardens*.
B. T. Galloway, *Plant Pathologist, Special Research Projects*.
Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service*.
Wilson Popenoe and J. F. Rock, *Agricultural Explorers*.
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H. C. Skeels, *Botanist, in Charge of Collections*.
G. P. Van Eseltine, *Assistant Botanist, in Charge of Publications*.
L. G. Hoover, *Assistant Plant Introducer, in Charge of Chayote Investigations*.
C. C. Thomas, *Assistant Plant Introducer, in Charge of Jujube Investigations*.
E. L. Crandall, *Assistant in Charge of Photographic Laboratory*.
P. G. Russell and Patty Newbold, *Scientific Assistants*.
D. A. Bisset, *Superintendent in Charge, Bell Plant Introduction Garden, Glenn Dale, Md.*
Edward Goucher, *Plant Propagator*.
J. E. Morrow, *Superintendent in Charge, Plant Introduction Garden, Chico, Calif.*
Henry Klopfer, *Plant Propagator*.
Edward Simmonds, *Superintendent in Charge, Plant Introduction Garden, Miami, Fla.*
Charles H. Steffani, *Plant Propagator*.
W. A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*
Henry Juenemann, *Superintendent, Plant Introduction Garden, Bellingham, Wash.*
E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*
Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartless, *Seharunpur, India*; E. W. D. Holway, *Faribault, Minn.*; Barbour Lathrop, *Chicago, Ill.*; Dr. H. L. Lyon, *Honolulu, Hawaii*; Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Littleriver, Fla.*; Dr. L. Trabut, *Algiers, Algeria*; Dr. William Trelease, *Urbana, Ill.*; E. H. Wilson, *Jamaica Plain, Mass.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM JAN- UARY 1 TO MARCH 31, 1918 (NO. 54; NOS. 45705 TO 45971).

INTRODUCTORY STATEMENT.

This fifty-fourth inventory represents a war-time period and is small in numbers, but some very interesting and it is hoped valuable introductions are included in its pages.

Perhaps the most notable collections included are those made by Prof. F. C. Reimer, whose studies of pear-blight and whose search after a resistant species of *Pyrus* are among the most interesting occurrences in the field of plant pathology. Prof. Reimer, at considerable financial sacrifice and personal risk, made a thorough canvass of the pear situation in China and collected as a result of his work what is certainly the most comprehensive assortment of oriental forms and species of the genus *Pyrus* (Nos. 45821 to 45850) which has ever been introduced. He believes it includes the material from which in all probability will be produced, by selection and breeding with the European pears, the varieties resistant to fire-blight which are adapted for stocks because of their freedom from this disease. He thinks from it will come the hardy varieties of pears which in time will be grown in the northern Great Plains region, where pear growing is now impossible, and he finds that a few varieties of these oriental pears are sufficiently good in quality to warrant their use without improvement in those regions where the fire-blight has hitherto made pear growing unprofitable.

Pyrus betulaefolia \times *phacocarpa* he found growing on dry hill-sides, on the plains, and even in ponds where for a large part of the year water covered its roots a foot deep. This hybrid is found from extreme northern China to the Yangtze River. This may be useful in America as a stock, since it is used in this way in China. It is unfortunately not blight resistant, however, but since this disease does not exist, so far as known, in Europe it may be more valuable there.

Pyrus calleryana Prof. Reimer gathered from its northernmost limit, central Chosen (Korea). *Pyrus phacocarpa* becomes a tree

60 feet in height and $2\frac{1}{2}$ feet in diameter. *Pyrus serrulata*, a species from which, apparently, have originated some of the small-fruited cultivated varieties of central China and which has shown a marked degree of blight resistance, is represented. *Pyrus ussuriensis* is the species of which young trees (from seed which Mr. Frank N. Meyer collected) have shown a higher degree of resistance to blight than any other species yet tested. It is from this that have arisen some of the best cultivated pears of China such as the "Ya Kuang li," a large pear resembling the Bartlett, which compares well in flavor with the best European pears; the "Suan li," a small but very juicy pear of tart flavor; and the "Pai li," a medium-sized lemon-yellow pear of excellent flavor.

The researches on crown-gall and the search for a stock for the stone fruits have revealed the fact that the Japanese mume (*Prunus mume*, Nos. 45876 to 45881) is worthy of careful study, and through the kindness of Prof. Onda a collection of the most promising varieties has been obtained. These include the varieties which are most used by the Japanese for the production of their pickled mume, a kind of pickle which for sourness makes all other pickles seem sweet. There are said to be several hundred varieties of this species (which is classed as an apricot rather than a plum), and a thorough canvass of the various forms should be made.

As the result of many years of plant breeding and selection, Dr. Van Fleet has produced some remarkable varieties of chestnuts of the species *Castanea crenata* and of the Chinese species which Mr. Meyer introduced (*C. mollissima*), which is resistant to the bark disease. He has produced some interesting hybrids between *Castanea crenata* and *C. pumila*, the common chinquapin. These are for trial as orchard trees for the production of table chestnuts (Nos. 45858 to 45866).

In this connection Mr. Meyer's discovery of a shrubby chinquapin (*Castanea sequinii*, No. 45949), which is found on the mountain slopes of central China and which appears to be immune to the bark disease and at the same time better adapted to moist locations, is worthy of mention.

In 1898 Prof. Hansen introduced a Russian variety of quince (*Cydonia oblonga*, S. P. I. No. 1123), which at Murdock, Kans., has proved hardy and which bears excellent fruit, whereas the standard varieties do not fruit there. Budded plants of this variety are being again distributed under Nos. 45889 and 45890.

During the winter of 1917-18, when Mr. Meyer was in Ichang, he made an investigation of the Ichang lemon, which, according to the researches of Swingle, is to be considered as a new species of the genus *Citrus* (*C. ichangensis*). He found that it was used by the

Chinese largely as a "room perfumer," and he remarks in regard to their use of it that "they carry them about to take an occasional smell of them, especially when passing malodorous places." But by the Europeans in Ichang the fruits of this lemon are preferred to the ordinary lemon for making lemonades. Since trees of it in the Changyang region have withstood temperatures of 19° F., it may have special value because of its hardiness. Mr. Meyer's introduction (No. 45931) is a large variety of this remarkable fruit.

The yang-tao (*Actinidia chinensis*) has so far established itself in this country that there are hundreds of plants of it scattered in private places from the southern Atlantic coast to Puget Sound. It has fruited sparingly, but its fruits have decided promise, being of excellent flavor and having good shipping qualities. The introduction by Meyer of a smooth-skinned variety (No. 45946) from the Hupeh Province, which he says "combines the flavors of the gooseberry, strawberry, pineapple, guava, and rhubarb," is not without especial interest at this time.

In the koumé of Zanzibar (*Telfairia pedata*, No. 45923) we may have a valuable addition to the list of tropical table nuts, providing it is a heavy bearer. Through the late Mr. Buysman, who conducted a private plant-introduction garden for many years at Lawang, Java, the first seeds of this curious cucurbit were received. It is a rank-growing tropical liana, covering the trees at the edge of the forests of East Africa. It produces fruits 3 feet long and 8 inches in diameter, bearing over 250 large, flat, oily seeds the size of an almond and of good flavor. Reports on this species have also been sent in by Dr. H. L. Shantz, who saw it during his exploration of East Africa and formed a favorable impression of its qualities.

Little has been done in the way of providing the Tropics with a good table grape, although there are species of *Vitis* which it would seem might easily be developed for this purpose. In *Vitis* sp. (No. 45796), a wild species from the brushwood of the low country of Zacuapam, Mexico, which tastes like a Catawba, and in another small-fruited form (*Vitis tiliaefolia*, No. 45797), both sent in by Dr. C. A. Purpus, we may have species which the plant breeder can use to advantage.

From our collaborator, Dr. L. Trabut, whose remarkable work has won for him the Frank N. Meyer memorial medal for distinctive services in the field of plant introduction, we have received an interesting species of wild rice from West Africa. Unlike the true rice, it sends out rootstocks, and from its character of holding its foliage for several months it converts swampy lands into excellent pastures. It rises to 1½ meters in height and, like our own wild rices, scatters its seeds, making the collection of grain difficult. Chevalier has

classed this *Oryza barthii* (No. 45717) as one of the very best forage plants of West Africa, and it is as such that it is being tried here.

One of the most spectacular introductions of recent years into the Southwest is that of the athel, an African tamarisk (*Tamarix aphylla*, No. 45952), which is considered the best of the Egyptian species both for timber and as a windbreak by Dr. Trabut, from whom the plants originally came. They constitute one of the best of the many gifts of Dr. Trabut to this country. In the Coachella Valley its handsome form is already transforming the landscapes and adding great rows of beautifully shaped trees to the desert. Its rapid growth even exceeds that of the Eucalyptus, and the settlers there are most enthusiastic about its value. To Prof. J. J. Thornber belongs the credit for its introduction in this region, for the trees now in the valley were introduced by him, although in 1899 Mr. Walter T. Swingle secured and shipped in plants noted in our Inventory No. 7 under the name *Tamarix articulata*, No. 3343. Unfortunately, these plants died en route, owing to the recall to the port of departure of the ship on which they were placed and to a consequent delay of three months in reaching this country. The practical utilization of the plant is due to the prompt recognition of its value by Mr. Bruce Drummond, of the Indio Date Garden.

Whether it would be advisable to introduce the gall insect, which Dr. Trabut calls to our attention and which produces on this tamarisk large quantities of galls containing 45 per cent of tannin, is a question requiring careful study.

Mrs. Zelia Nuttall, the noted archæologist of Mexico, whose love for plants has led her to investigate the vegetables used by the Aztecs, calls our attention to three forms of a remarkable new vegetable, a species of *Chenopodium* named by Mr. Safford in her honor (*Chenopodium nuttalliae*, Nos. 45721 to 45723). The large branching inflorescences of this rapid-growing plant, gathered before the seeds ripen, are cooked as a vegetable. According to Mrs. Nuttall, it forms a delicious potherb of peculiar delicacy. Since it grows rapidly and can be cultivated in our Southwest, it deserves special consideration.

The success of the roselle (*Hibiscus sabdariffa*) as a source of brilliant jelly-making material and an excellent substitute for cranberry sauce makes Wester's two Philippine varieties of it of special interest (Nos. 45800 and 45801).

Although the mulberry has hardly any real rank in America as an orchard fruit, to drop it out of our fence corners and yards and deprive our children of the delights of coloring their faces and their clothes with its brilliant juice would be a pity. *Morus acidosa* (No. 45708) is a bushy mulberry from the Provinces of Hupeh and Szechwan, which when I first saw it in the Arnold Arboretum was

covered with quantities of berries with a tart flavor quite different from the supersweetness of the ordinary mulberries. It deserves a place in our dooryards where there is not room for a mulberry tree.

Of new or little-known ornamentals the following seem to promise unusual interest: A gorgeous yellow-flowered shrub from New Zealand (*Pomaderris elliptica*, No. 45892); a Chinese Gordonia from Hongkong (*G. axillaris*, No. 45718); the beautiful *Amygdalus triloba* (No. 45727), a flowering almond which ranks as one of the most beautiful of blooming shrubs; *Rosa helenae* (No. 45729) from western Hupeh, where it forms thickets 6 meters across and as many meters high, which are covered with masses of fragrant white blooms, according to its discoverer, Mr. E. H. Wilson; *Hydrangea paniculata praecox* (No. 45733), the seeds of which Prof. Sargent collected in Hokkaido, Japan, where it makes a growth of 20 feet in height; and *Acokanthera spectabilis* (No. 45748), a flowering shrub from southwestern Africa sent in by Mr. Walsingham, of Cairo, which has pure-white, scented flowers borne in short, dense cymes.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., August 19, 1921.

INVENTORY.¹

45705 to 45711.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 2, 1918.

45705. COTONEASTER FRANCHETI Bois. Malaceæ.

A very ornamental shrub from Yunnan Province, China, remarkable for its graceful form, persistent foliage, and brilliant red fruits. The ovate leaves, about $1\frac{1}{2}$ inches long, green above and silvery hairy beneath, persist almost throughout the winter. The drooping branches, clothed when young with white hairs which become brown with age, are abundantly covered with orange-red oblong fruits, half an inch in length, making the plant extremely beautiful for massing effects or as a bush. The white flowers are in corymbs of 5 or 10. The plant is easily cultivated, will flourish in any soil, and requires only an airy exposure for abundant fruitfulness. It can be multiplied easily by seeds or cuttings. (Adapted from *Revue Horticole*, vol. 79, p. 256.)

45706. COTONEASTER HORIZONTALIS PERPUSILLA C. Schneid. Malaceæ.

This ornamental plant, a native of China, is one of the most charming and distinct of all hardy shrubs; it has a marked flat-distichous mode of growth. In open ground, it grows about 3 feet high, producing flat, table-like branches densely clothed with tiny, orbicular, deep lustrous-green deciduous leaves. The young wood is covered with a thick brown wool. The small, abundant flowers are pink-white, and although the plant is very pretty when in bloom, it attracts more notice when in fruit; the berries are small, very plentiful, and scarlet when ripe. This shrub is very pretty, growing on ledges of a rockery or at the foot of a wall where it will grow 6 or 7 feet high flat against the wall. It can be increased by both cuttings and seeds. (Adapted from the *Gardeners' Chronicle*, vol. 32, ser. 3, p. 91.)

45707. COTONEASTER ZABELI C. Schneid. Malaceæ.

An ornamental bushy shrub up to 7 feet in height, with corymbs of pink or pinkish flowers which are followed by clusters of red fruits. This is the common cotoneaster of the thickets in western Hupeh. The

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will undoubtedly be changed in many cases by the specialists interested in the various groups of plants, to bring the forms of the names into harmony with recognized American codes of nomenclature.

oval-elliptic leaves are usually rounded and emarginate or mucronulate, but occasionally acute; often all forms are found on the same shoot. (Adapted from *Sargent, Plantae Wilsonianae, vol. 1, p. 166.*)

45708. *MORUS ACIDOSA* Griffith. Moraceæ.

Mulberry.

Usually a broad shrub from 3 to 16 feet in height, but occasionally forming a tree up to 25 feet in height. It is found in the Provinces of Hupeh and Szechwan, China. The leaves are very variable in size and shape and are not used for feeding silkworms. The fruits are dark red or shining black and palatable. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 300.*)

45709. *PRUNUS SERRULATA PUBESCENS* Wilson. Amygdalaceæ.

Flowering cherry.

"At its best this variety is a tree of moderate size, from 13 to 16 meters tall and from 1 to 2 meters in girth of trunk, but I saw very few such large trees in Japan. In habit and in the size and color of the flowers it agrees closely with var. *spontanea* (white or pink, from 1.5 to 2.5 centimeters, usually 2 centimeters, in diameter). The branchlets as a rule remain gray for a longer period and do not assume the characteristic chestnut-brown color until after several years." (*Wilson, The Cherries of Japan, p. 35.*)

45710. *PRUNUS TOMENTOSA* Thunb. Amygdalaceæ.

This shrub, 6 to 8 feet in height, appears perfectly hardy and vigorous; it flowers and fruits well at the Arnold Arboretum and withstands perfectly the rigorous winters at Ames, Iowa; its fruit buds are hardy and its flowers endure severe frost without injury. It forms a broad, spreading, twiggy bush of numerous branches rising from the ground and clothed with branches to the base. These lower branches, where they touch the moist ground, often send out roots and form independent plants. The bark is a gray or bronzy brown, smooth at first, but finally scaling off laterally in thin flakes like the bark of the yellow birch. The downy gray young branches are thickly covered with buds, from which a profusion of flowers and leaves appear simultaneously in early spring. The sessile flowers, crowded in the axils of the leaves, are smaller than those of the common cherry and are white or light rose in color. The leaves are ovate, serrate, sparingly hairy above, densely and softly so beneath, with long, slender, persistent stipules. The red cherries, half an inch in diameter, are slightly covered with very short, inconspicuous hairs; the firm, juicy, pleasantly acid flesh is without the noticeable staining qualities characteristic of some of the wild cherries and plums. With careful selection and cultivation this little cherry might prove of some economic value. Native to northern China. (Adapted from *Garden and Forest, vol. 5, p. 58.*)

45711. *PRUNUS TOMENTOSA ENDOTRICHIA* Koehne. Amygdalaceæ.

This variety differs from *Prunus tomentosa* in that the leaves are elliptic to oblong, with a very short petiole, and the fruit is dark red, about half an inch in diameter.

45712. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From the city of Panama, Panama. Presented by Mr. B. H. A. Groth. Received January 2, 1918.

Papaya seeds imported for experimental purposes.

"There are included both yellow and pink-fleshed varieties of many sizes and shapes." (*Groth.*)

45713 to 45716. *PRUNUS* spp. Amygdalaceæ.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 2, 1918,

Introduced for experimental use by the Office of Horticultural and Pomological Investigations.

45713. *PRUNUS AVIUM* L.

Mazzard cherry.

A common species often used as a stock and also, certain forms at least, as an ornamental.

45714. *PRUNUS ARMENIACA* L.

Apricot.

45715. *PRUNUS CERASIFERA MYROBALANA* (L.) C. Schneid.

Myrobalan plum.

The Myrobalan plum (a popular stock for *domestica* plums) is now regarded as a culture form of *Prunus cerasifera*, though it is often held as a distinct species under the name of *P. myrobalana*.

45716. *PRUNUS DOMESTICA* L.

Plum.

A variety called "Julian" by Vilmorin-Andrieux & Co. It seems not to be the variety *juliana* as understood in this country, however.

45717. *ORYZA BARTHII* Cheval. Poaceæ.

Rice.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 3, 1918.

An interesting African species, used for both human food and forage. In habit it differs markedly from the cultivated rices, throwing out rootstocks to a length of several decimeters, with scattering stems rising from them. The foliage remains green for two or three months and converts many swampy lands into excellent pastures. The stems rise to a height of 1 to 1½ meters—even higher in deep water. The panicle is short; and the ripe grain, which is small, falls out of the husk very easily. For this reason it is impossible to cut the heads for thrashing without losing most of the grain. To obviate this difficulty, the aborigines, in those regions where the plant is common, paddle among the ripe grain in their canoes, shaking the panicles over a small calabash, or basket, held in one hand. Most of the grain falls into the basket and is saved. If it is late in the season, the ripe grain will float on the surface of the water and that which falls outside of the basket may be recovered.

This species is not cultivated; in fact, the grain has very limited use, owing to the difficulty in harvesting it. It is sold at a very high price, however, and is considered a product of unusually choice quality.

The grain is not so important, from an economic standpoint, as the forage which the plant furnishes. It is considered one of the very best forages of West Africa. (Adapted from *Chevalier, Bulletin du Muséum National d'Histoire Naturelle*, 1910, No. 7, p. 406.)

45718 to 45720.

From Hongkong, China. Presented by Mr. W. J. Tutcher, Botanical and Forestry Department. Received January 3, 1918.

45718 to 45720—Continued.

45718. *GORDONIA AXILLARIS* (Roxb.) Szyszyl. Theaceæ.
(*Camellia axillaris* Roxb.)

A handsome evergreen shrub from China, which succeeds very well in a good conservatory [in England], but is rather more sensitive to cold than the other camellias. It bears large, yellowish white, axillary flowers, with obcordate, partly crumpled petals and many yellow stamens of unequal length, connected at the base, falling off with and holding the petals together. The leaves are a beautiful dark glossy green; the lower are serrate, the upper quite entire. (Adapted from *Curtis's Botanical Magazine*, pl. 2047.)

For an illustration of this tree in its native habitat, see Plate I.

45719. *PTEROCARPUS INDICUS* Willd. Fabaceæ.

Padouk. A tall tree with ascending glabrous branches, compound leaves 6 to 9 inches long, leaflets 2 to 4 inches long, yellowish flowers in large terminal or axillary panicles, and an orbicular pod 2 inches broad. It is distributed through the Malay Archipelago, the Philippines, and China. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 239.)

Macmillan, in his "Handbook of Tropical Gardening and Planting," lists this species as a shade tree suitable for low, moist regions (annual rainfall 70 inches or more). He also lists it as a tree the wood of which is valuable for timber.

45720. *TUTCHERIA SPECTABILIS* (Champ.) Dunn. Theaceæ.

A handsome, ornamental small tree or shrub, indigenous to the island of Hongkong. The leaves are alternate, short petioled, coriaceous, and shining. The flowers are about 2½ inches in diameter, usually having seven white, roundish obovate petals. The fruit is the size of a small apple, retaining at the base the persistent sepals and containing several fairly large seeds. The plant flowers in May and fruits in November. (Adapted from *Champion, Transactions of the Linnean Society*, vol. 21, p. 111.)

45721 to 45723. *CHENOPODIUM NUTTALLIAE* Safford. Chenopodiaceæ.
Huauhtzontli.

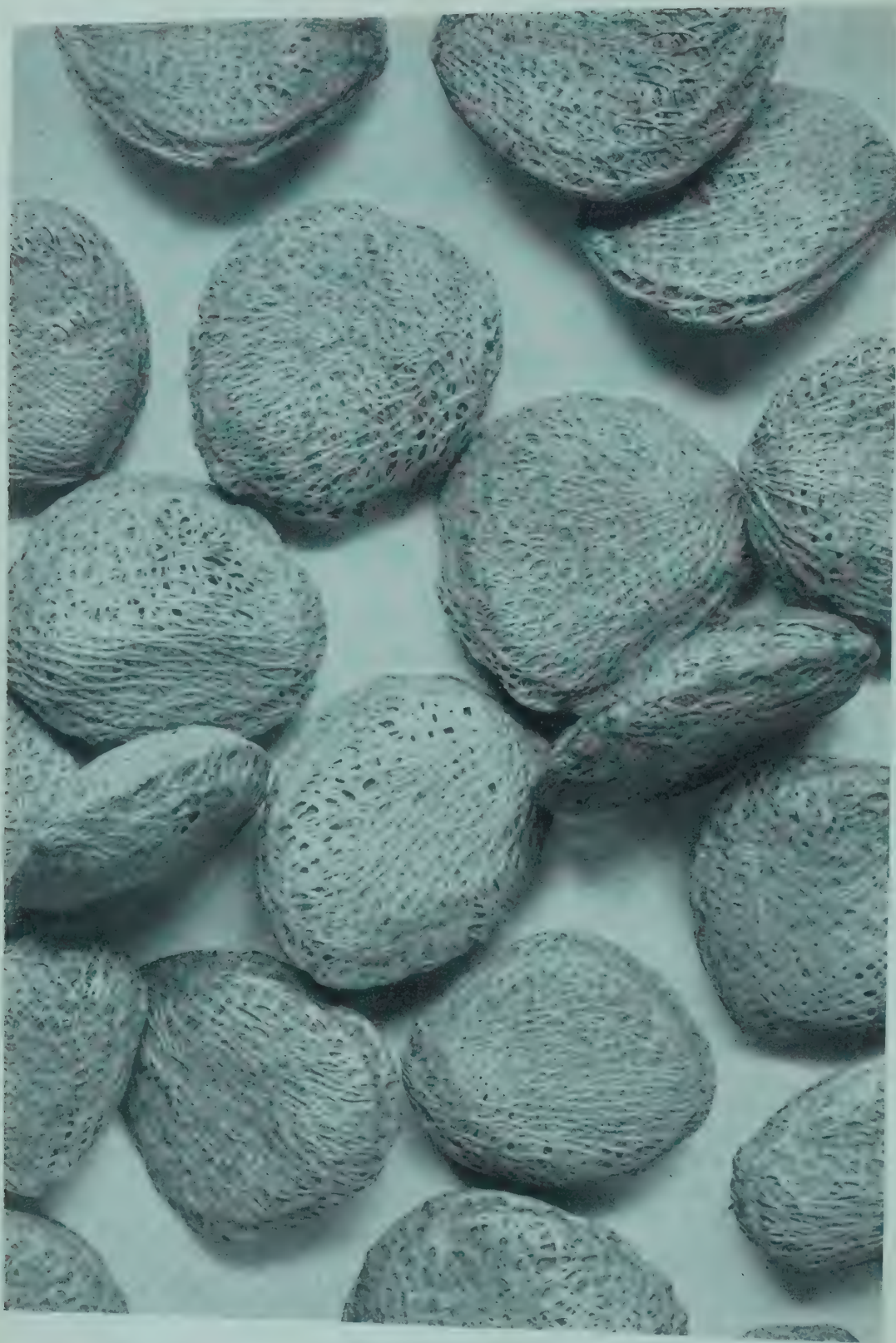
From Mexico. Presented by Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, City of Mexico. Received January 4, 1918. Quoted notes by W. E. Safford.

45721. "*Xochihuauhtli* (flowering huauhtli). A plant cultivated near the city of Mexico for the sake of its prolific branching inflorescences, which are gathered before they are quite mature, while the seeds are still soft, and cooked with other ingredients as a vegetable. This variety, with yellowish or pale-brown, discoid seeds, is the most popular. The inflorescences are known by the Aztec name *huauhtzontli*, signifying "huauhtli heads." Botanically the plant is closely allied to *Chenopodium paganum* Reichenb. and *C. album* L. It is quite distinct from *C. quinoa* Willd., the celebrated food staple of the Peruvian highlands; and it must not be confused with the plant called *michihuauhtli* (fish-egg huauhtli), which is a white-seeded *Amaranthus*, not a *Chenopodium*."



A HANDSOME FALL-BLOOMING, BROAD-LEAVED EVERGREEN FROM SOUTHERN CHINA. (*GORDONIA AXILLARIS* (ROXB.) SZYSZYL, S. P. I. No. 45718.)

This large-flowered evergreen shrub or small tree is of particular value, since so few trees bloom in late summer and fall. The large, shining, dark-green leaves and creamy white flowers, 2 to 3 inches across, are very attractive and should be a welcome addition to the gardens of the Southeastern States. For parks and cemeteries in this section it may prove of unusual value. There are only 16 known species of *Gordonia*, 2 of which are native to southeastern North America and the others native to southeastern Asia and the Malay Archipelago. (Photographed by E. H. Wilson, No. 391, near Kiating, Szech van, China, October 5, 1908.)



KOUMÉ NUTS FROM ZANZIBAR. (*TELFAIRIA PEDATA* (J. E. SMITH) HOOK.,
S. P. I. No. 45923.)

These nuts are produced in a large gourdlike fruit 3 feet long and a foot in diameter. Each gourd contains 200 of these seeds. The vine which bears them is a tropical, rank-growing cucurbit which climbs to the top of forest trees—a regular liana. In East Africa the koumé nuts are used by Europeans as table nuts and for flavoring cakes, and a sweet, pleasant-tasting edible oil is extracted from them. They have been seriously considered as a source of vegetable oil, but the bitter inner skin surrounding the oily kernel and the hard nature of the shell are obstacles to be overcome before they are eligible for oil-producing purposes. As a decorative screen for the edge of the forest and because of its edible nuts, it is worthy of study by tropical horticulturists. (Photographed by E. L. Crandall, October 1, 1920, from seeds sent in from East Africa by Dr. H. L. Shantz; P26505FS.)

45721 to 45723—Continued.

45722. "*Tlilhuauhtli* (black huauhtli). A plant used by the Mexicans as a potherb, possibly the original form from which the pale-seeded *xochihuauhtli* has been developed by cultivation. Like the latter, the immature inflorescence (*huauhtzontli*, or huauhtli heads) is used for food. The seeds of this variety, discoid in form with the periphery crenated, resemble very closely those of *Chenopodium album* and *C. paganum*. The plant should not be confused with the common forms of *Amaranthus*, which are used when young by the Mexicans as potherbs and which have jet black, very highly polished seeds."

45723. "*Tlapalhuauhtli* (red huauhtli). A variety of *xochihuauhtli* having reddish or rose-colored seeds. Like the yellow or pale-brown variety, they are in the form of disks with the periphery distinctly crenulate and differ decidedly from *Chenopodium quinoa*, of the Peruvian highlands, to which they are botanically related. The prolific, branching inflorescences are gathered before the seeds are mature and cooked with other ingredients as a vegetable. This plant must not be confused with the sacred *michihuauhtli* of the Aztecs, which is not a *Chenopodium*, but a white-seeded *Amaranthus*."

45724 to 45726.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

45724. *ACACIA SCORPIOIDES* (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

A tree which varies greatly in size in different districts. The leaves are compound, consisting of 10 to 30 pairs of linear-oblong leaflets 5 to 6 centimeters long. The flowers are borne in clusters of two to six in each upper axil; the petals are almost entirely united and twice as long as the calyx. The pod is linear, straight, or slightly curved. (Adapted from *Muschler, A Manual Flora of Egypt*, p. 460.)

The gum which exudes from the branches of this tree is used as a local application, being soothing to irritated or inflamed mucous membranes. It possesses, however, little medicinal value of its own, its principal use being as a vehicle for more powerful remedies. (Adapted from the *National Standard Dispensatory*, p. 6.)

45725. *CROTALARIA* sp. Fabaceæ.

These were sent in as blue flowered. They agree closely with *C. juncea* L., which is yellow flowered.

45726. *DODONAEA VISCOSA* (L.) Jacq. Sapindaceæ.

"A very interesting hedge plant which is beautifully dense and green, responds to the shears perfectly, and when taken in hand early makes a perfectly compact wall clear to the ground. The seedling plants form a rather deep taproot and must be transplanted with some care on that account. This is one of the most perfect tropical hedge plants I have ever seen. The shrub is called *tatta* by the natives." (*Prof. S. C. Mason.*)

45727 to 45729.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 8, 1918.

45727. *AMYGDALUS TRILOBA* (Lindl.) Ricker. Amygdalaceæ.

(*Prunus triloba* Lindl.)

Flowering almond.

One of the most beautiful of all hardy flowering shrubs; it is covered with a profusion of pink and white flowers and will thrive in almost any good garden soil, either as a bush in the open or trained to a wall. It may be planted at any time during the winter, and once it has filled its allotted space it should be closely pruned each spring immediately after blooming. The flowers are borne on the young wood; hence, by removing this promptly at the time stated, vigorous new shoots are produced for flowering the following year. (Adapted from *The Garden*, vol. 79, p. 17.)

45728. *COTONEASTER FOVEOLATA* Rehd. and Wils. Malaceæ.

"*Cotoneaster foveolata* is a tall shrub with black fruit and leaves which late in the autumn turn to brilliant shades of orange and scarlet. For its autumn foliage this plant might well find a place in every garden." (*Arnold Arboretum Bulletin of Popular Information* No. 50.)

45729. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ.

Rose.

"*Rosa helenæ* is very abundant in rocky places from river level to 1,500 meters everywhere in western Hupeh and eastern Szechwan, but it has not yet been reported from farther west. In wayside thickets and by the banks of streams it forms tangled masses often 6 meters tall and as much through, and in the margins of woods it rambles over small trees. When covered with masses of its white fragrant flowers this rose is very beautiful. It has proved quite hardy and has flowered profusely at the Arnold Arboretum." (*Sargent, Plantae Wilsonianæ*, vol. 2, pt. 2, p. 311.)

45730 and 45731.

From the city of Panama, Panama. Plants presented by Sr. Ramon Arias-Feraud. Received January 9, 1918.

45730. *CEPHAELIS* sp. Rubiaceæ.

"Obtained in the Chiriqui Mountains." (*Arias-Feraud*.)

"*Raicilla*, or *ipeacuana*. A shrub 8 to 16 inches high, with ascending or erect simple stem and somewhat creeping root. It is one of the sources of the medicinal ipecacuana. The typical plant grows in Peru, but specimens of closely allied or identical species from Central America are in the economic collection of the United States Department of Agriculture.

"Roots and stems only were received, so that it is impossible to identify this plant with certainty." (*W. E. Safford*.)

45731. *SMILAX OFFICINALIS* H. B. K. Smilacaceæ.

Sarsaparilla.

"Obtained in the Chiriqui Mountains." (*Arias-Feraud*.)

"*Chiriqui sarzaparilla*. A climbing plant with square stem, armed along the angles with triangular prickles resembling those of a rose. Leaves glabrous, often a foot long, variable in form, often triangular or oblong, acute at the apex, cordate or somewhat auriculate at the base, with two or three longitudinal nerves on each side of the midrib; petioles

45730 and 45731—Continued.

bearing a pair of long tendrils some distance from the base. Flowers in stalked umbels. This species has been collected in Honduras. It bears a certain resemblance to the Mexican *Smilax medica* Schlecht. et Cham. in its much larger leaves, distinctly angled stems, and stouter spines. It is very distinct from the species of smilax recently received from Jamaica. The roots are of a cinnamon-brown color and are said to be more amylaceous than the 'Jamaica sarsaparilla' of commerce. It is one of the principal sources of sarsaparilla." (W. E. Safford.)

45732. ORYZA SATIVA L. Poaceæ.**Rice.**

From Nanhsuchou, Anhwei Province, China. Presented by Mr. J. Lossing Buck, Nanhsuchou Agricultural Experiment Station. Received January 10, 1918.

"A bearded variety called 'fragrant rice' by the Chinese. It brings three times the price of other rice on the market. It is grown in a restricted area about 20 miles north of Nanhsuchou." (Buck.)

45733. HYDRANGEA PANICULATA PRAECOX Rehder. Hydrangeaceæ.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received January 11, 1918.

"There are two forms of this hydrangea with perfect and ray flowers, and one of these, variety *praecox*, is just coming into flower [July 5]; and the other, variety *tardiva*, will not be in flower for several weeks. There are three plants of the variety *praecox* in the collection, differing in the size of the flower clusters and in the size of the ray flowers. The handsomest and the earliest of these was raised from seeds collected by Prof. Sargent in Hokkaido, where it grows into a small tree sometimes 20 or 30 feet tall." (Arnold Arboretum Bulletin of Popular Information No. 28.)

45734 to 45745. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Received through Mr. William F. Montavon, American commercial attaché, Lima. Received January 4, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45734. No. 1. *Rosa subido*, Sapallanga. "A purple-tinged variety."

45735. No. 17. *Colorado Jaspeado*, Churcampa. "A strawberry-colored or calico-colored variety."

45736. No. 22. *Guindo*, Marcaballe. "A red variety."

45737. No. 23. *Plomo Jaspeado*, Sicaya. "A mottled-purple variety."

45738. No. 11. *Encarnado*, Paucarbamba. "A strawberry-colored or calico-colored variety."

45739. No. 3. *Beata*, Sicaya. "A mottled-purple variety."

45740. No. 25. *Negro*, Huanchos. "A dark reddish purple variety."

45741. No. 24. *Polvo de Oro*, Colcabamba. "A golden-brown variety."

45742. No. 28. *Blanco Perlas de la Reina*, Acobamba. "A white variety."

45743. No. 16. *Colorado Oscuro*, Acostambo. "A red variety."

45744. No. 10. *Sangre de Toro*, Surcubamba. "A dark-red variety."

45745. No. 41. *Flor de Retrama*, Chongos. "A yellow variety."

45746 and 45747. PYRUS spp. Malaceæ.**Pear.**

From Stotts Station, D. C. Presented by Mr. Bernard F. Joy. Received January 15, 1918.

45746. PYRUS sp.

"A seedling pear of the oriental type, with small, hard, roundish fruit, found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., near the Eastern Star Home. Foliage glossy and leathery; wood clean, smooth, and bright; growth vigorous; tree very fruitful and has never blighted; fruit about the size of a walnut, hard and gritty, practically worthless; may be valuable as a resistant stock. According to Mr. Joy, this tree came with a lot of varieties he purchased about 8 or 10 years ago. More than likely it was a budded or grafted tree, and the bud or graft failed to grow." (*B. T. Galloway.*)

45747. PYRUS sp.

"A seedling pear of the oriental type, with large, roundish, apple-shaped fruit; found on the place of Mr. Bernard F. Joy, Stotts Station, D. C., not far from the Eastern Star Home. A vigorous tree which so far has not been subject to blight. The fruit is woody and gritty, but quite sweet. The tree has a clean habit and may prove valuable as a stock." (*B. T. Galloway.*)

45748. ACOKANTHERA SPECTABILIS (Sond.) Benth. Apocynaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received January 5, 1918.

A large shrub, native to the western districts of South Africa from Albany to Port Natal, growing on wooded sand hills near the sea. The glabrous branches are stout, green, and obscurely angled. The coriaceous, elliptic leaves are 3 to 5 inches long and narrowed into a very short petiole. The pure white, sweet-scented flowers borne on very short pedicels in densely fascicled short cymes make the plant very beautiful at flowering time. In fact, so dense does the inflorescence become that it often appears as a globose head near the top of the branch. Some of the natives are said to consider this plant poisonous. (*Adapted from Curtis's Botanical Magazine, pl. 6359.*)

45749. COLOCASIA ESCULENTA (L.) Schott. Araceæ.**Taro.**

From Okitsu, Japan. Tubers received from Prof. T. Onda, of the Imperial Agricultural College. Received January 15, 1918.

"*Kinu-katsugi (Yego-imo)*. A Japanese taro of the dasheen type, the tubers of which are similar in appearance to most other varieties received from that country. In comparison with the Trinidad dasheen the cormels, or lateral tubers, are small, moist when cooked, and lacking in flavor. However, this variety is considered one of the best grown in Japan." (*R. A. Young.*)

45750 to 45754.

From Lavras, Minas Geraes, Brazil. Presented by Dr. Benjamin H. Hunnicutt, Director da Escola Agricola de Lavras. Received January 7, 1918.

45750. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. Jaboticaba.

"One of the best indigenous fruits of Brazil and, at the same time, one of the most curious and interesting, owing to its habit of producing its fruits directly upon the trunk and larger branches (cauliflory). Several

45750 to 45754—Continued.

species are grown under the name of *jaboticaba*; they are still somewhat confused botanically, but it appears that most of the plants common in cultivation belong either to *Myrciaria cauliflora* or *M. jaboticaba*, fruits of the latter being distinguishable from those of the former by the presence of a slender stem.

"The *jaboticaba* occurs in southern Brazil, both wild and cultivated. It is a very handsome tree, reaching a height of 35 or 40 feet, with a dense dome-shaped crown. The leaves are small, lanceolate, and light green in color; flowers white, with four petals and a conspicuous tuft of stamens. The fruits are produced in the greatest abundance and are the size of large grapes, with a tough leathery skin, juicy white pulp of rather acid aromatic flavor, and two to four flattened oval seeds. The resemblance between the *jaboticaba* and some of the grapes of the Muscadine group, e. g., James, is very striking, not only in general appearance but also in flavor.

"The *jaboticaba* prefers a soil that is rich and deep; it is rather slow of growth, coming into bearing after six or eight years. It withstands slight frosts and gives promise of being successful in southern Florida and perhaps also in sheltered locations throughout southern California. At the present time seed propagation is the only means of multiplication which is commonly employed, but inarching or some other means of propagation should be utilized to perpetuate good varieties." (*Wilson Popenoe.*)

45751. *SOLANUM BULLATUM* Vell. Solanaceæ.

Capoeira branca. An interesting plant which grows on the rolling prairies of the State of Minas Geraes, Brazil, and which is said to have unusual value for feeding live stock, especially horses.

Analyses made by the Bureau of Chemistry, United States Department of Agriculture, show that this plant contains an unusual quantity of protein. The percentages shown by these analyses are as follows: Moisture—leaves, 8.36; branches, 7.04. Ether extract—leaves, 2.29; branches, 0.59. Protein—leaves, 20.88; branches, 14.06. Crude fiber—leaves, 28.03; branches, 37.45.

45752. *STRYPHODENDRON BARBATIMAM* Mart. Mimosaceæ.

"A small leguminous tree which occurs commonly on the plains of the State of Minas Geraes and is said by Pio Correa to be distributed from Para in northern Brazil to Sao Paulo in the southern part of the country. The bark contains a high percentage of tannin and is known as *casca da virgindade*; the seeds are said to be poisonous and the leaves to have medicinal qualities. It is the bark, however, that seems to have economic interest, being considered of value for use in tanning. According to Brazilian authorities it contains as high as 40 per cent of tannin; an analysis made by the Bureau of Chemistry, United States Department of Agriculture, gave the following percentages: Total dissolved solids, 31.6; soluble solids in cold water, 28.6; nontannins, 6.7; tannins, 20.1." (*Wilson Popenoe.*)

45753 and 45754. *ZEA MAYS* L. Poaceæ.

Corn.

45753. Typical yellow flint from Brazil.

45754. A white variety of the flour type.

45755. ZEA MAYS L. Poaceæ.**Corn.**

From Caracas, Venezuela. Presented by Mr. Preston McGoodwin, American Minister. Received January 8, 1918.

A native white corn of the flour type. This corn is planted widely in Venezuela and is exported in large quantities.

45756. CHAYOTA EDULIS Jacq. Cucurbitaceæ.**Chayote**

(*Sechium edule* Swartz.)

From Zacuapam, Mexico. Fruits presented by Dr. C. A. Purpus. Received January 3, 1918.

"The chayote is becoming known in the United States as a useful vegetable belonging to the squash family. In some parts of tropical America it is eaten as commonly as are potatoes in North America and in the same manner: Stewed with meat, creamed, and so on. It has not the food value of the potato, but is more comparable in this respect to the squash. In an effort to extend and improve its culture in this country, varieties are being introduced from as many regions as possible." (*Wilson Popenoe.*)

45757 to 45765. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 10, 1918. Quoted notes by Mr. E. B. Brown, of the Office of Corn Investigations.

"Varieties of the flour type introduced for experimental and breeding work."

45757. No. 20. *Punso*, Huarnancaca. "A dark-red variety."

45758. No. 33. *Flor de Granada*, Pucara. "A purple variety."

45759. No. 21. *Café con Leche*, Huayuca. "A coffee-with-milk colored variety."

45760. No. 6. *Rosa Bajo*, Sapallanga. "A purple variety."

45761. No. 2. *Crema*, Chongos. "A yellow variety."

45762. No. 32. *Granada*, Salcabamba. "A purple variety."

45763. No. 13. *Mixto*, Huarnancaca. "A variegated variety."

45764. No. 8. *Pecho de Paloma*, Chupaca. "A purplish and mottled variety."

45765. No native name. "A purple and yellow variety."

45766. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.**Oil palm.**

From Buitenzorg, Java. Presented by Mr. P. J. S. Cramer, chief, Plant Breeding Station. Received January 23, 1918.

This palm is very important economically. The fruit is used by the natives for food; an intoxicating drink is made from the juice of the stem; the leaf-stalks and leaves are used for thatching the native houses; and the fleshy outer layer and the kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. It is a native of tropical West Africa and, both wild and in cultivation, occurs over immense areas. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 538.)

Messrs. Dorsett, Shamel, and Popenoe, in Department of Agriculture Bulletin No. 445, mention the uses of this tree in Brazil. In regard to the oil from the pulp they say: "Dendé oil [as it is there called] is an important food prod-

uct, entering into the preparation of a number of dishes, some of which, such as vatapá, are considered peculiar to the region. While utilized by all classes of people, its greatest popularity is among the negroes, long familiarity having made dendé oil almost as indispensable to them as olive oil is to the Spaniard."

45767. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ.

Ma-yuen.

From Soochow, China. Presented by Prof. N. Gist Gee, Soochow University. Received January 10, 1918.

This variety might be called the cultivated edible *Job's-tears* and includes many forms, all of which are characterized by having a thin, loose, easily broken shell. They are often longitudinally striated and in many examples are constricted at the base into what is called an annulus. In the central provinces of India, among the aboriginal tribes, this grain forms an important article of food. In Japan, where the plant has been introduced, the seeds are pounded in a mortar and eaten as meal. (Adapted from *The Agricultural Ledger*, No. 13, p. 217.)

45768. JUGLANS CATHAYENSIS Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received January 22, 1918.

A deciduous tree, native to central, western, and southwestern China. At low altitudes it forms a bushy tree 15 to 30 feet high, flowering and fruiting when 8 to 10 feet high. In the woods and forests it occasionally makes a tree 40 to 70 feet high. The leaves on young plants are often a yard long, rivaling those of *Ailanthus* and *Cedrela*. The fruits are produced in clusters of 6 to 10 and are $1\frac{1}{2}$ to $1\frac{3}{4}$ inches long. The seeds are sweet and pleasantly flavored. (Adapted from *Gardeners' Chronicle*, 3d ed., vol. 50, p. 189.)

45769. × EUCALYPTUS TRABUTI Vilm. Myrtaceæ. Eucalyptus.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 21, 1918.

"A hybrid between *Eucalyptus botryoides* and *E. rostrata* found in sowing seeds from a tree of the former species which stood near one of the latter. Always tends to revert to the male parent. It is the first undoubted *Eucalyptus* hybrid, and the existence of hybrids in this genus has been denied by Baron Ferdinand Mueller. This hybrid is one of the most vigorous trees of the genus, and in a nursery row at the Mustapha Experiment Station it has crowded out the pure species. The beautiful red wood is suitable for furniture." (*Trabut*.)

45770 to 45773.

From Cairo, Egypt. Presented by Mr. W. Carl McQuiston. Received January 24, 1918.

45770 and 45771. CUCUMIS MELO L. Cucurbitaceæ. Melon.

Introduced for varietal studies.

45770. De Cavillon.

45771. Egyptian sweet.

45772. CUCURBITA PEPO L. Cucurbitaceæ. Vegetable marrow.

A garden product much prized in Europe, although little known in this country. It thrives well, however, when grown here. The following account of the culture and uses of the plant, taken from *Gardening Illustrated*, is quoted in *Bailey, Standard Cyclopedia of Horticulture*, p. 2960:

45770 to 45773—Continued.

"*Vegetable marrows* should be eaten young—say when about one-fourth to one-sixteenth their full size. Cut in this state, and boiled quickly until quite tender in plenty of water, carefully strained, and served with melted butter, they are second to no vegetable that comes to the table, not even excepting green peas or asparagus. Early cutting, careful cooking, and serving are the chief points to which attention should be paid; but there are others, one of the principal being rapid growth. Grow *vegetable marrows* quickly and they are almost sure to be good; grow them slowly and you will find them often tough and bitter. Hence, the soil or place in which they are grown can hardly be too rich for them. Not but what they do fairly well in any good garden soil, but the richer it is the better. On a rubbish heap, for instance, *vegetable marrows* grow with wonderful vigor and fruit abundantly."

45773. *HOLCUS SORGHUM SUDANENSIS* (Piper) Hitchc. Poaceæ.

Sudan grass.

Introduced about 10 years ago, this grass has become very popular as a forage crop. It is easily cured, easily handled as hay, and very drought resistant. It is much superior to ordinary sorghum in the above qualities, and in yield, drought resistance, and palatability it appears distinctly to outclass Johnson grass. It does best in the South, but has been grown in some of the Northern States. Sudan grass is probably best adapted to the drier portions of Texas, Oklahoma, and Kansas; and it seems well adapted for growing with cowpeas for hay and silage. (Adapted from the *Yearbook of the United States Department of Agriculture for 1912, p. 495.*)

45774 and 45775. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

From Srinagar, Kashmir, India. Nuts presented by Mr. R. K. Koul, Koul's Gardens. Received January 24, 1918.

45774. "This walnut compares favorably in size with the best varieties cultivated in the United States. Its shell, however, is rather thick and hard. The form of the nut is broadly oblong-oval, the length $1\frac{1}{4}$ inches. Its quality has not been tested, but judging from its external appearance this would appear in most respects to be a good variety." (*Wilson Popenoe.*)

45775. "A slightly smaller nut than the preceding [S. P. I. No. 45774], and differing markedly in shape. It is slender and tapers slightly toward both ends. The outline is almost elliptical. The surface is not so heavily wrinkled as in the above variety and in most of those grown in the United States. The shell appears to be quite hard. The quality of this variety has not been tested." (*Wilson Popenoe.*)

45776 to 45783. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ.

Taro.

From Sienku, Chekiang Province, China. Tubers presented by Mrs. A. O. Loosley Received January 25, 1918. Quoted notes by Mrs. Loosley, except as otherwise indicated.

"*Yü-na*. This vegetable, if need should arise, might help out the potato crop, as it comes between the potato and the artichoke. The natives call the

latter 'foreign yŭ.' I think these are a little more solid than the artichoke. They are like the potato in substance, but more glutinous and quite different in flavor. They are a substantial addition to a meal. The 'sprouts' are separated in the field, excepting in the 'ginger variety,' and it is these sprouts which are planted for the new crop. In suitable soil and conditions the vegetable is prolific. The crop is harvested in the autumn in the district of Taichow Sienku, Chekiang Province, whence these specimens came."

45776. "*Ong-yŭ*, or red *yŭ*, is a little red on the point, cooks a trifle glutinous. The natives prefer these, and I have sent more of this kind. It is a local variety."²

45777. "*Ong-hwa-yŭ*, or red floury *yŭ*, is very pink and cooks mealy. It is a local variety."

45778. "*Ts'ih yŭ*; also called *Tsiang-yŭ* or ginger *yŭ* because the 'na,' or shoots and head, are more like the ginger root and do not divide easily; this sort is the only one of which I am sending the 'head,' as the Chinese call it. The other specimens all have a head like this, but more clearly separated from the root and easily broken off; whereas this one must be divided by cutting. The natives say this particular one will divide in five pieces for planting. The ginger *yŭ* cooks mealy."

45779. "*Ts'ing yŭ*, or blue *yŭ*, is a little bluish on the point and stalks and has a large leaf. This variety also cooks mealy, but is said to be better to eat after keeping a few months. It keeps well."

45780. "*Ta-yŭ*, or large *yŭ*, has a large head and few sprouts; also mealy."

"This taro roughly resembles the Trinidad dasheen in leaf characters, though the petioles have lighter markings, like those of the 'arradumbe' [S. P. I. No. 36057] from Rhodesia. When cooked the corms and cormels (lateral tubers) are slightly yellowish and of smooth texture. Both are rather moist, and yet the corms are somewhat mealy and very pleasing to the taste. They improve in quality after being dug. The corms are elongated and regular in form and weigh about a pound each. The tubers are small, weighing only from 1 to 3 ounces each." (R. A. Young.)

45781. "*Wöng-yŭ*, or yellow *yŭ*; point a little yellow; glutinous."

"The leaf stems of the yellow *yŭ* are blackish maroon. The corm is roundish and when cooked is moist, soft, and light colored with a tinge of violet at top. The cormels are rather small and when cooked are moist and soft. Both corms and cormels lack flavor." (R. A. Young.)

45782. "*U-ken-yŭ*, or black-stalked *yŭ*; the stalk is black and more nearly round. This is the earliest variety and is glutinous."

"The corms of this variety are tough when cooked and unfit for table use. The cormels, or tubers, are of fair size but are soft, pasty, and flavorless. The plant is small growing and the leaf stems blackish maroon." (R. A. Young.)

45783. "*Ong-hwa-yŭ*, or red floury *yŭ*, is a variety having the same name as S. P. I. No. 45777, but the sprouts come out in a different way."

² Upon being grown, the tubers listed as S. P. I. No. 45777 proved to be a variety of *Colocasia antiquorum* (L.) Schott.

45784. *SECALE CEREALE* L. Poaceæ.

Rye.

From Pampas Centrale, Argentina. Presented by Mr. Juan Williamson.
Received January 29, 1918.

"A yellow variety of rye which was found in a neglected field in Argentina among plants of the ordinary green color. The yellow plants were transplanted and fertilized by ordinary green plants. The seed produced from this fertilization, when grown the next year, produced all green plants. The seed of these plants the following year produced both yellow and green plants in the proportion of one yellow to three green ones. It was also found that when yellow plants are fertilized by pollen from yellow plants the offspring are all yellow. It is thought that the yellow color is due to the wider spacing of the chlorophyll plastids." (Williamson.)

45785 to 45788. *ZEA MAYS* L. Poaceæ.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received January 29, 1918.

45785. No. 5. *Rosa* (No. 2), Pilcomayo. Rose-colored corn from Pilcomayo.

45786. No. 12. *Amarillo Bajo*, Chupaca. Short yellowish corn from Chupaca.

45787. No. 9. *Anaranjado*, Colca. Orange-colored corn from Colca.

45788. No. 14. *Plomo Oscuro*, Chupaca. Dark lead-colored corn from Chupaca.

45789 to 45791.

From Summer Hill, New South Wales, Australia. Presented by Mr. Hugh Dixon. Received January 29, 1918.

45789. *ELAEOCARPUS CYANEUS* Ait. Elæocarpaceæ.

"Grows naturally in a sandy peaty soil, although it will stand a stronger one. Should stand 10° F. if not continuous." (Dixon.)

Usually a small glabrous tree, although sometimes attaining a height of 60 feet or more. The elliptic-oblong to oblong-lanceolate leaves are 3 to 4 inches long, acute at the base, coriaceous, and very conspicuously reticulate. The flowers are borne in loose racemes which are shorter than the leaves. The hard globular drupe is usually one seeded and blue in color. Found in Queensland, New South Wales, and Victoria. (Adapted from *Bentham, Flora Australiensis*, vol. 1, p. 281.)

45790 and 45791. *KENNEDYA* spp. Fabaceæ.

"Grow well in my garden in rather stiff soil. Should stand 10° F. if not continuous." (Dixon.)

45790. *KENNEDYA MONOPHYLLA* Vent.

(*Hardenbergia monophylla* Benth.)

"*Kennedya monophylla* is a mass of royal blue when in flower. It is better to cut it half back after flowering or after the seed is ripe.

It does well in a sunny hedge, untrimmed in winter." (Dixon.)

An Australian plant with solitary, ovate or lanceolate, coriaceous, strongly reticulate leaflets which are 2 to 4 inches in length. The numerous flowers occur in pairs or rarely three together on pedicels rather longer than the calyx. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 246.)

45789 to 45791—Continued.

45791. *KENNEDYA NIGRICANS* Lindl.

A large twining vine from Western Australia. The broad, ovate leaflets are 2 to 3 inches long, and very often only one to each leaf. The deep violet-purple flowers are about 1 inch in length and are borne in racemes which are shorter than the leaves. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 249.)

45792 to 45797.

From Zacuapam, Mexico. Presented by Dr. C. A. Purpus. Received January 3, 1918.

45792. *ACACIA SPHAEROCEPHALA* Cham. and Schlecht. Mimosaceæ.

Bull-horn acacia.

"One of a group of acacias remarkable for their large, stipular, inflated spines, which closely resemble the horns of a buffalo. This particular species is a shrub or small tree. The leaves are bipinnate and have remarkable glands on the rachis and leaflets. The flowers are borne in globose heads on long thick peduncles, clustered in the axils of the long forklike spines. The seeds, when ripe, are surrounded by a sweetish yellow or orange-colored pulp which causes the fallen pods to be eagerly sought after by pigs and other animals." (*W. E. Safford.*)

45793. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ.

Tomato.

"The common tomato of Mexico." (*Purpus.*)

45794. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"*Frijol majan.* This bean is adapted to a hot country and should be planted in a rocky or gravelly soil. It is often planted as a filler between banana trees." (*Purpus.*)

45795. *VIGNA SESQUIPEDALIS* (L.) Fruwirth. Fabaceæ. Yard-Long bean.

"*Tripa de Gallina.* An excellent bean for salad or for cooking like string beans. It is adapted to a hot country. These seeds were produced near Misantla, Vera Cruz." (*Purpus.*)

45796. *VITIS* sp. Vitaceæ.

Grape.

"*Callullos.* A large grape which has the taste of a Catawba and is used for making a fine jelly. It grows in the brushwoods in the low country." (*Purpus.*)

45797. *VITIS TILIAEFOLIA* Humb. and Bonpl. Vitaceæ.

Grape.

(*V. caribaea* DC.)

"A small-fruited wild grape excellent for jelly. This is essentially a tropical grape." (*Purpus.*)

For previous introduction, see S. P. I. No. 45361.

45798. *ANNONA SENEGALENSIS* Pers. Annonaceæ.

From Loanda, Angola, Africa. Presented by Mr. Antonio d'Oliveira-M., Inspector of Agriculture. Received February 15, 1918.

"Variety *ambacensis.* The plant from which this seed was obtained, growing at an altitude of 2,500 feet, came into full fruit about the middle of December." (*D'Oliveira-M.*)

Annona senegalensis varies greatly in size, sometimes being a low shrub up to 2 or 3 feet in height and again a tree 20 feet in height. The young branches are rusty or tawny tomentose. The coriaceous leaves have a

rounded apex and broadly rounded base, and the upper surface is glabrescent while the lower is usually pale and more or less pubescent. The solitary flowers are borne on spreading or decurved peduncles, one-third of an inch to $1\frac{1}{2}$ inches long. The edible fruit is erect or pendent, yellow or orange when ripe, and $1\frac{1}{2}$ inches or more in diameter. This plant has been found in Upper Guinea, Lower Guinea, north-central Bornu, Nile Land, and Mozambique District. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 16.*)

45799. JUGLANS REGIA L. Juglandaceæ.

Walnut.

From India. Nuts presented by Mr. C. C. Calder, Curator of the Herbarium, Royal Botanic Gardens, Sibpur, near Calcutta, who obtained them from Mr. Green, Cinchona Plantation, Munsong. Received January 26, 1918.

"No. 2. The large-leaved, large-seeded walnut. The trees of this kind are more spreading than and not so lofty as those of the common kind. It attains a very large size." (*Green.*)

45800 and 45801. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

From Manila, Philippine Islands. Presented by the Bureau of Agriculture. Received January 30, 1918.

45800. Archer. "Plant robust, frequently exceeding 1.60 meters in height, branching freely, all parts of the plant being greenish or whitish; stems nearly smooth; leaf lobes rather narrow; flowers smaller than those of the red types; eye yellowish; pollen pale yellow; stigma green; full-grown calyx greenish white, sparsely covered with short stiff bristles; average length of calyx 45 mm., width 26 mm., including epicalyx 32 mm.

"The *Archer* is very prolific, the fruit is somewhat less acid than that of the red types, and the products made from it are whitish or amber colored. In the West Indies a wine is made from this variety which is said to resemble champagne in taste and appearance.

"Seed of the above-described variety was received from Mr. A. S. Archer, Antigua, British West Indies, by the writer early in 1913, and it was tested at the Lmao Experiment Station the same year. It has been named in honor of Mr. Archer." (*Wester, Philippine Agricultural Review, June, 1914.*)

45801. Rico. "The young plants of the *Rico* retain their unifoliate leaf characters longer than the *Victor*, and the leaves later are mostly tripartite instead of five parted. The stems and calyces are dark red and the leaves dark green with reddish veins. The pollen is golden yellow. The calyx is of about the same length as that of the *Victor* [45 to 50 mm.], but of greater equatorial diameter [28 mm.]; the fleshy spines subtending the calyx lobes are stout and stand at nearly a straight angle from the axis of the fruit; the apex of the calyx lobes is frequently incurved.

"The *Rico* has been named and described from plants grown from seed obtained by the writer in 1911 from Mr. J. E. Higgins, horticulturist of the Hawaii Agricultural Experiment Station, and has probably descended from a variety grown in 1902 in the Agricultural Experiment Station, Mayaguez, Porto Rico, by Mr. O. W. Barrett, now chief of the division of experiment stations of this Bureau." (*Wester, Philippine Agricultural Review, March, 1912.*)

45802. TRITICUM SPELTOIDES (Tausch) Grenier. Poaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 30, 1918.

A bushy grass, branching from the base, with slender, erect stems bearing rough narrow leaves and stiff, rather loose, spikes of long-awned flowers. It is a native of western Asia, being found especially in Syria, and is considered one of the species from which the cultivated wheats were derived. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 2, p. 711.)

45803. GLEDITSIA SINENSIS Lam. Cæsalpiniaceæ. Honey locust.

From Yih sien, Shantung Province, China. Presented by Rev. R. G. Conradt. Received February 5, 1918.

A tree up to 60 feet in height, with a trunk girth of 3 to 9 feet, found in the dry valleys of western Szechwan at altitudes ranging from 3,000 to 5,000 feet. It grows to a very large size, with a massive bole clean of branches for 9 to 30 feet from the ground and a wide-spreading head of thick branches. The bark is quite smooth and pale gray in color. In degree of spinescence the trees vary considerably, and some are quite thornless. The wood is nearly white and of little value, but the flattened pods are rich in saponin and are valued as a substitute for soap; they are also used in the process of tanning hides. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 91.)

45804 and 45805.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director of the Botanic Gardens. Received February 6, 1918.

45804. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

A medium-sized Malayan tree, with large feathery leaves and globular, purplish brown fruit, about the size of an apple. It is one of the most delicious fruits of the Tropics. The delicate, white, juicy pulp, surrounding and adhering to the seed, is the part eaten. The dense, thick, reddish rind contains tannin and a dye. The tree is a slow grower and does not usually bear until it is 9 or 10 years old. The essential conditions are a hot, moist climate and a deep, rich, well-drained soil. It thrives up to 1,500 feet and is propagated usually by seed, but also by layering. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 164.)

For previous introduction, see S. P. I. No. 45180.

45805. NEPHELIUM LAPPACEUM L. Sapindaceæ. Rambutan.

A large, handsome, spreading tree, up to 40 feet in height; common in the low country of Ceylon and the vicinity of Malakka Strait, ascending to 2,000 feet altitude. The terminal clusters of bright crimson fruits, about the size of hen's eggs, are produced on every branch, each fruit being covered with long soft spines. The large seed is surrounded by a layer of white, opaque pulp, which is of a very agreeable acid taste. The tree is readily propagated by grafting or "gootees" (layering). (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 176.)

45806 to 45808. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 7, 1918.

45806. No. 27. *Salmon*, Iscuchaca. Salmon-colored corn.

45807. No. 30. *Amarillo Subido*, Chongos. Yellow gold-tinged corn of the flour type.

45808. No. 31. *Amarillo Melchocha*, Punta. Yellow-paste corn of the flour type.

45809. CORCHORUS CAPSULARIS L. Tiliaceæ.**Jute.**

From Calcutta, India. Obtained by Mr. James A. Smith, American consul general, from Ralli Bros. Received February 11, 1918.

"The leaves of both *Corchorus capsularis* and *C. olitorius* are commonly eaten as a vegetable when the plants are young, and the practice apparently extends to the wild plant both in India and in other parts of southern Asia; also in Egypt and the Levant, where *C. olitorius* is said to be an important potherb." (*Ralli Bros.*)

This species and the closely allied *Corchorus olitorius* are the chief sources of the jute fiber of commerce. *Corchorus capsularis* is annual, attaining a height of 8 to 12 feet, with a long, thin stem branched only at the top. The flowers are small and yellow. The young shoots of some varieties are commonly used as a potherb, especially in Egypt. The fiber is obtained by means of retting in stagnant pools. Retting consists in steeping the stems in water until they soften sufficiently to allow the fibro-vascular bundles to be extracted from the softer material around them. The fiber is extensively used in the manufacture of cordage, coarse cloth, fishing nets, gunny bags, etc. The plant requires a hot, moist climate followed by a dry season. The method of propagation consists either in broadcasting the seed or transplanting into rows the seedlings raised in a nursery. This plant is indigenous to Ceylon, India, and the Malay Peninsula. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 841, and *Macmillan, Handbook of Tropical Gardening and Planting*, p. 542.)

45810. SCHOENOCAULON OFFICINALE (Schlecht.) A. Gray. Melanthiaceæ.**Sabadilla.**

From Caracas, Venezuela. Presented by Mr. H. Pittier. Received February 11, 1918.

This plant is also known as *Asagraea officinalis* Lindl., *Veratrum officinale* Schlecht., and *Sabadilla officinarum* Brandt. It is a bulbous plant, growing in grassy places on the eastern declivities of the volcanic range of the Cofre de Perote and Orizaba, near Teocelo, Huatusco, and Zacuapam, down to the seashore in Mexico; also in Guatemala. It has been cultivated near Vera Cruz, Alvarado, and Tlacotalpan, on the Gulf of Mexico.

The fruit consists of three follicles about half an inch long, united at the base. These are light brown in color and papery in texture. Each follicle usually contains two narrow, pointed, black seeds. The testa incloses an oily, albuminous interior. The seed is inodorous and has an acid bitter taste.

Sabadilla (*Cebadilla*) is used principally as a source of veratrin, which is a powerful irritant and counterirritant. In Mexico the bulb of the plant is used as an anthelmintic under the name of *cebolleja*, but is said to be very dangerous in its action. (Adapted from *Pharmacographia, A History of Drugs*, *Flückiger and Hanbury*, p. 697.)

45811. AMARANTHUS PANICULATUS L. Amaranthaceæ. Guate.

From Culiacan, Sinaloa, Mexico. Procured by Mr. W. E. Chapman, American consul, Mazatlan, from Mr. Frank G. Leeke, Culiacan. Received February 12, 1918.

"Guate is an ancient Aztec foodstuff modernly used (popped) with sugar and milk as a breakfast food; also ground into meal after popping. Possible production, one-half ton per acre. It grows semiwild amid corn, as a secondary crop. The present production is very small, but can be stimulated if a market is opened." (Leeke.)

45812 to 45814. SOLANUM MURICATUM Ait. Solanaceæ. Pepino.

From Ecuador. Obtained by the American consul general, Dr. F. W. Goding, Guayaquil. Received February 13, 1918.

"During a recent trip to the interior I saw thousands of the plants growing near Huigra on a farm owned by Mr. Edward Morley.

"There are three varieties of the fruits: The green, the green striped with purple, and the dark purple.

"This fruit forms a part of the diet of the people of the interior, being eaten raw or cooked in various ways; but foreigners prefer them in a salad as the common cucumber is prepared; served in this way they are delicious." (Goding.)

45812. *Morado oscuro*, purple pepino.

45813. *Blanco*, white or green pepino.

45814. *Morado claro*, light green striped with purple.

45815. ZEA MAYS L. Poaceæ. Corn.

From Guelph, Canada. Presented by Mr. J. A. Neilson, of the Ontario Agricultural College. Received February 13, 1918.

"Squaw corn, which was grown during the season of 1917, near Pine River, in the Province of Manitoba. Pine River is north of 52° north latitude and is about 228 miles northwest of Winnipeg. The man who grew this corn said that he did not have any difficulty in getting it to grow in this section. The stalks are rather low growing and will produce ears in a comparatively short time.

"This may not be of any particular value to you in the United States, as you now have many excellent varieties, but it may be of interest to you to know that well-ripened corn can be grown even as far north as the above-mentioned place." (Neilson.)

45816 and 45817.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received February 15, 1918.

45816. *GARCINIA MANGOSTANA* L. Clusiaceæ. Mangosteen.

For previous introduction and description, see S. P. I. No. 45804.

45817. *LANSIUM DOMESTICUM* Jack. Meliaceæ. Langsat.

"This, like the mangosteen, is a delicious oriental fruit not yet well established in America but esteemed throughout the Malayan region. Judging from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West

45816 and 45817—Continued.

Indies and other parts of the American Tropics. The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white translucent flesh, which separates into five segments. Each segment normally contains an oval seed, but some of the segments in each fruit are usually seedless. The flavor is highly aromatic, at times slightly pungent. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways." (*Wilson Popenoe*.)

45818. CRATAEGUS MEXICANA Moc. and Sesse. Malaceæ.**Hawthorn.**

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 15, 1918.

This seed is from a tree which flowered in Egypt. The tree is bushy, 8 to 10 feet in height, with glabrous, olive-colored branches. The leaves are oblong, attenuated at the base, and 2 to 3 inches in length. The abundant flowers are borne in terminal corymbs. The fruit is larger than is usual among the hawthorns. The color when ripe is pale yellow, dotted with brown. It is a native of the table-lands of Mexico and has been found quite hardy in England. (Adapted from *The British Flower Garden*, p. 300.)

45819. ROSA GENTILIANA Lev. and Van. Rosaceæ.**Rose.**

From Kew, England. Presented by the director of the Royal Botanic Gardens. Received February 15, 1918.

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. It grows best in rocky situations from river level to 1,400 feet altitude. The numerous large white flowers are very fragrant, and the anthers are golden yellow. This species is easily distinguished by its glabrous, pale-gray shoots and 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Received as *Rosa cerasocarpa* Rolfe, which is referred to *R. gentiliana* in *Plantae Wilsonianae*.

45820 to 45838.

From Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received February 15, 1918.

Obtained by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to find blight-resistant stocks for commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

45820. CRATAEGUS PINNATIFIDA Bunge. Malaceæ.**Hawthorn.**

"No. 65. From the Chien Shan Mountains, near Lishan, Manchuria. This is the large-fruited hawthorn found wild and widely cultivated in Manchuria, northern China, and eastern Siberia. It has been introduced

45820 to 45838—Continued.

at various times during the past and often described. It should be tested for blight resistance and as a stock for pears."

45821. *PYRUS BETULAEFOLIA* × *PHAEOCARPA*. Malaceæ. Pear.

"No. 61. Seeds obtained from wild trees at Hsia Ying and Panshan, China. This species produces an abundance of small brown fruit about as large as good-sized peas and of very poor flavor. The trees are very vigorous and attain a height of 50 feet and a trunk diameter of 20 to 30 inches. More often, however, it is a tree from 30 to 40 feet high, with a trunk about 1 foot in diameter. It is a widely distributed species, and I found it from extreme northern China to the Yangtze River. This species is certainly a marvel in its ability to adapt itself to all sorts of conditions. It is common on dry hillsides, on the plains, along edges of ponds, and I often saw it growing well in ponds where the water around the tree, for at least a large part of the year, was a foot deep. It is used extensively throughout northern and eastern China as a stock for all their cultivated varieties and seems to be admirably suited for this purpose. What a pity that this species is so susceptible to pear-blight! Where root-blight is not troublesome this should prove a valuable pear stock in this country."

45822. *PYRUS BETULAEFOLIA* Bunge. Malaceæ. Pear.

"No. 66. From Kingmen, Hupeh Province, China. These seeds were collected from typical trees of this species growing near trees of *Pyrus calleryana*. A careful study will be made of the seedling to determine whether or not these two species have hybridized. The trees are very vigorous and often attain very large size in this region."

45823 to 45828. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.

45823. "No. 18. Collected at Hadzmura, Ise Province, Japan. Tree 30 feet high with a trunk 12 inches in diameter, growing along the edge of a rice field about a foot above an irrigation ditch. A very vigorous specimen and bearing large quantities of small fruit."

45824. "No. 24. Collected near the village of Kono, Ise Province, Japan. About 50 trees growing on a mountain side. These trees were small, looking more like large bushes than trees, being only 3 to 8 feet high and with trunks from 1 to 5 inches in diameter. They had evidently been cut off for fuel, which accounted for their small size. The trees were loaded with small brown fruits from one-fourth to half an inch in diameter."

45825. "No. 30. Collected 5 miles south of Suigen, Chosen (Korea), in the Kwasan Mountains. These were the largest trees of this species that I saw in Korea, being 15 feet tall and from 5 to 6 inches in diameter. They are of especial interest and value, because central Chosen is the northern limit of this species, and the winters are quite cold; hence, these trees may prove considerably hardier than those from central China and southern Japan; and, if so, can be used as a stock in colder regions in this country."

45826. "No. 31. Collected 2 miles west of Suigen, Chosen. This is the type which has been named *Pyrus faurei* by Schneider. It is very similar to *P. calleryana*, but the trees and leaves are usually much smaller. I regard this as simply a dwarf form of *P. calleryana*, the dwarf habit being due to the fact that this is

45820 to 45838—Continued.

the northern limit of the species and the trees or bushes are usually growing on very poor soil. The northernmost region in which I found this type was from 75 to 100 miles north of Seoul, Chosen."

45827. "No. 64. Collected from typical trees at Kingmen, Hupeh Province, China. The trees are very vigorous and often reach a height of 60 feet and a trunk diameter of 2 feet. *Pyrus betulaeifolia* is abundant in the same region and grows under the same conditions."

45828. "No. 103. Obtained in the Chien Kang Mountains, northwest of Ichang, China, at an altitude of 2,900 feet. The tree from which this seed was taken was 30 feet high with a trunk diameter of 18 inches and bore an enormous crop of fruit. The species is very common in the mountains north and south of Ichang."

45829 and 45830. *PYRUS PHAEOCARPA* Rehder. Malaceæ. Pear.

45829. "No. 47. Collected near Tan Che Tse temple, about 30 miles southwest of Peking, China. Tree wild, about 35 feet high, with trunk 1 foot in diameter. The fruit, which is borne in clusters of from one to five, is roundish, of russet color, from one-half to three-fourths of an inch in diameter, two to three celled, and has a deciduous calyx. Near Yangfan I saw trees of this species from 50 to 60 feet high, with trunks $2\frac{1}{2}$ feet in diameter and an enormous spread of branches. Young trees of this species, from earlier introductions, when inoculated with pear-blight have proved quite susceptible to the disease. It should be tested further, to determine its resistance or susceptibility to blight and as a stock for other pears."

45830. "Collected 20 miles west of Peking, China. This form is similar to No. 47 [S. P. I. No. 45829], and the notes under that number will also apply to this."

45831 and 45832. *PYRUS SERRULATA* Rehder. Malaceæ. Pear.

45831. "No. 100. Collected in the Chien Kang Mountains, 15 miles northwest of Ichang, China, at an altitude of 3,700 feet. The tree is of medium size and moderately vigorous. The fruit is round, russet color, from half an inch to an inch in diameter, three or sometimes two celled, and has a deciduous calyx. The leaves are a very rich dark green and remain on the trees very late in the fall. This type should be tested very thoroughly as a stock for cultivated varieties. It has shown a marked degree of resistance to pear-blight in our work at Talent. This type probably has given rise to some of the small cultivated varieties in Central China."

45832. "No. 105. Obtained at an altitude of 3,275 feet in the mountains 15 miles northwest of Ichang, China. It is very similar to No. 100 [S. P. I. No. 45831], except the shape of the fruit, which is obovoid. To be tested for blight resistance and as a stock for other pears."

45833. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

"No. 60. Collected from wild trees at Shinglungshan, China. Trees of this species were formerly very abundant in this region, but as it has been

45820 to 45838—Continued.

opened up for settlement during the past five years and as the soil is well suited to agriculture, most of the trees have been destroyed. However, many trees are still left, especially along the margins of the valley, in the canyons, and along the streams. These trees attain a very large size, often reaching 75 feet in height and $2\frac{1}{2}$ feet in diameter. The fruit is roundish or slightly flattened, from 1 to $1\frac{1}{2}$ inches in diameter, greenish in color, with gritty flesh and sour flavor. Earlier introductions of this species made by Mr. Frank N. Meyer have shown greater resistance to pear-blight than any other species in the experiments at the Oregon station. It appears to be very promising as a stock for cultivated pears in very cold regions in this country, in regions where blight attacks the roots and trunks of the trees, and in breeding hardy and blight-resistant varieties. It has given rise to some of the best cultivated varieties of northern China."

45834. *PYRUS* sp. Malaceæ.

Pear.

"No. 46. *Pin li*, or *Ping li*. Very similar to small *Suan li* [S. P. I. Nos. 45846 and 45847]. These seeds were obtained from fruit grown near the Chien Shan Mountains, near Lishan, Manchuria. This is a very popular cultivated variety in the Chien Shan region and seems to be well adapted to the conditions there. The fruit is small, varying from $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in diameter, roundish or slightly flattened in shape, and greenish yellow in color, with often a blush on one side. It ripens during September and possesses a very agreeable and refreshing tart flavor. This variety undoubtedly has been derived from *P. ussuriensis*, which it resembles in tree, leaf, and fruit character. While the fruit has the tart flavor of that species, it is of very much better flavor, and the flesh is softer than in the wild forms. The calyx is always persistent, open, and with distinctly spreading lobes. This variety will be thoroughly tested for blight resistance, and if it shows the marked degree of resistance characteristic of *P. ussuriensis* it should prove of great value, especially in breeding work."

45835. *PYRUS* sp. Malaceæ.

Pear.

"No. 112. *Pin li*. From Mukden, Manchuria. Identical with No. 46 [S. P. I. No. 45834]."

45836. *PYRUS* sp. Malaceæ.

Pear.

"No. 109. *Shampa li*. A cultivated variety grown in the Chien Shan Mountains, near Lishan, Manchuria. The fruit is small, yellowish when ripe, with a persistent calyx. It probably belongs to *P. ussuriensis* and for this reason should be thoroughly tested as a stock."

45837. *PYRUS* sp. Malaceæ.

Pear.

"No. 111. *Shampa li*. From Mukden, Manchuria. Identical with No. 109 [S. P. I. No. 45836]."

45838. *PYRUS* sp. Malaceæ.

Pear.

"No. 110. *Shu li*. Another cultivated variety from Liaoyang, Manchuria. Similar to *Shampa li*. Undoubtedly a cultivated form of *P. ussuriensis*."

45839 to 45850. *PYRUS* spp. Malaceæ.

Pear.

From China. Collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received February 16, 1918.

Scions of Chinese pears collected by Prof. Reimer during his recent trip, in cooperation with the Office of Foreign Seed and Plant Introduction, to obtain blight-resistant stocks for the commercial varieties of pears and for crossing with American varieties, in an effort to produce blight-resistant hybrids. Quoted notes by Prof. Reimer.

45839. *PYRUS CALLERYANA* Decaisne.

"Scions from Suigen, Chosen (Korea), of the dwarf form that grows in central Chosen. Fruit of no value. May prove valuable as a stock."

45840 to 45844. *PYRUS USSURIENSIS* Maxim.

"Scions of five different trees of the wild *P. ussuriensis* from Shing-lungshan."

45845. *PYRUS* sp.

"*Ya kuang li*. From Maton, China. A large pear, shaped somewhat like a Bartlett, but thicker toward the base end. It is very juicy and of very good flavor, comparing favorably with the better European pears. I regard this as an extremely promising pear. It certainly possesses considerable *Pyrus ussuriensis* blood, and for this reason we anticipate that it will show a marked degree of resistance to pear-blight. If this proves to be the case, this will be one of the most valuable pears ever introduced into America. It should prove to be of the very greatest value for breeding work."

45846 and 45847. *PYRUS* sp.

"*Suan li*. A small roundish or slightly flattened pear, greenish yellow in color, with often a slight blush on one side. It is very juicy and possesses a very agreeable tart flavor. While too small for the general market it should prove valuable for the home orchard, local market, and for breeding work. This variety undoubtedly belongs to *P. ussuriensis*. Hence its great value for breeding work."

45846. "*Suan li* from Lohualing Pass, China."

45847. "*Suan li* from Matow, China."

45848. *PYRUS* sp.

"*Pai li*. From Chenganssz, near Peking. A medium-sized pear of lemon-yellow color, with soft, juicy, sweet flesh of excellent flavor. This is regarded as one of the very best Chinese pears by both the Chinese and foreigners. It is an excellent keeper and can be obtained on the Peking market from October until March. This variety also shows some of the characteristics of *P. ussuriensis*, and I believe that that species was one of its parents.

"These three varieties [S. P. I. Nos. 45846 to 45848] are far superior to any of the other numerous oriental pears, at least as judged by the tastes of Americans. They are the first and only oriental varieties that I have ever seen or eaten which I could pronounce as really good in quality. These varieties constitute by far the best material that I have ever seen for breeding hardy pears for the cold Plains region."

45849. *PYRUS* sp.

"*Huang hsau li*. From Chenganssz, near Peking. A medium-sized roundish pear, yellowish with a bright-red cheek; flesh firm but of very poor quality."

45839 to 45850—Continued.

45850. *PYRUS* sp.

"*Pan chin tse*. From Chenganssz, near Peking. A very large greenish pear with a persistent calyx. Flavor tart; quality not high. May be of value in breeding work."

45851. *TRICHOSCYPHA* sp. *Anacardiaceæ*.

From Lambarene, Gabon, Africa. Presented by Rev. Edward A. Ford. Received February 16, 1918.

"I am sending you some seeds of a native fruit called *mvut*, of which there are two principal varieties, with the sarcocarp red and white, respectively; the former I think is the more common, the latter is larger and less pungent; it is the latter variety which I send." (*Ford.*)

45852 to 45856. *ZEA MAYS* L. *Poaceæ*.

Corn.

From Peru. Procured by Mr. William F. Montavon, American commercial attaché, Lima. Received February 18, 1918.

Samples of flour corn introduced for experimental and breeding purposes of the Office of Corn Investigations.

45852. No. 18. *Pasas, Locroja*. A type with irregular, elongated kernels of a brownish yellow color.

45853. No. 19. *Chancaca, Pucara*. A type with kernels of a brownish yellow color.

45854. No. 7. *Matiz Blanco Colorado, Pariahuanco*. A type with reddish kernels.

45855. No. 29. *Colorado Claro, Nahuinpuquio*. A type with reddish kernels.

45856. No. 26. *Canela, Puncha*. A type of a light brownish yellow color.

45857. *CHENOPODIUM AMBROSIODES* L. *Chenopodiaceæ*.

From Santos, Brazil. Presented by Mr. Carl F. Deichman, American consul. Received February 19, 1918.

Herva de Santa Maria. A native of Mexico, but now naturalized in Brazil. In the southern provinces of Brazil it is known by the above name, but in the northern provinces as *matruz*, *mentruz*, and *mastruco*. In Lisbon and the Azores it is called *hera tormiguera*.

The plant is an annual, but has an almost woody stem, 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are very small and of a black color. The whole plant has a powerful aromatic odor. An infusion of this plant has been used with good results in Europe as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, p. 713.)

45858 to 45866. *CASTANEA* spp. *Fagaceæ*.

Chestnut.

From Bell, Md. Cuttings presented by Dr. W. Van Fleet, of the Bureau of Plant Industry. Received February 23, 1918. Quoted notes by Dr. Van Fleet.

45858 to 45861. *CASTANEA CRENATA* Sieb. and Zucc.

45858. "Bell No. 1. Fourth generation by straight selection. Started by a variety cross between two early, prolific types of *C. crenata*.

45858 to 45866—Continued.

Very large nut, with good cooking qualities, but poor eating qualities when raw. The tree has a good habit, with thin, handsome branches. The trunk is clean and bright. Leaves very narrow."

See S. P. I. No. 45334 for previous introduction.

45859. "Bell No. 2. Fourth generation by selection. It is a prolific bearer. The fruit is very large and good for cooking, but not good for eating when raw. It is more bitter than Bell No. 1."

See S. P. I. No. 45335 for previous introduction.

45860. "Bell No. 3. Fourth generation. Much like Bell No. 2. Worth consideration for dissemination."

See S. P. I. No. 45336 for previous introduction.

45861. "Bell No. 4. Fourth generation by selection. The trees have very much the same habit as the previous numbers, and the nuts are about the same size. The nuts have good eating qualities and are better than the above numbers."

See S. P. I. No. 45337 for previous introduction.

45862. *CASTANEA MOLLISSIMA* Blume.

This is the common chestnut of China; it is distributed from the neighborhood of Peking in the northeast to the extreme limits of Szechwan and Yunnan in the west and southwest. Near villages and towns, where the wood is continually cut down to furnish fuel, this chestnut is met with as a bush or low shrub; but in thinly populated areas it is a tree from 15 to 20 meters tall, with a trunk from $\frac{1}{2}$ to 2 meters in girth. The Chinese name is *Pan li*, and the nuts are a valued article of food. (Adapted from *Sargent, Plantae Wilsonianae*, p. 194.)

See S. P. I. No. 45338 for previous introduction.

45863 to 45866. *CASTANEA PUMILA* \times *CRENATA*. Hybrid chestnut.

45863. "Bell No. 5. A very attractive nut of fair quality, which looks as though it would be a good commercial nut."

See S. P. I. No. 45340 for previous introduction.

45864. "Bell No. 6. Second (F_2) generation from self or chance fertilized seeds; Arlington, Va., 1916."

45865. "Bell No. 7. Second (F_2) generation from self or chance fertilized seeds; Arlington, Va., 1916."

45866. "Bell No. 8. Second generation. A very prolific tree, about 7 feet high, and yielding from 3 to 4 pounds of nuts this season (1916). The nuts are of very good flavor and of good size for a chinquapin, but small for a chestnut."

See S. P. I. No. 45341 for previous introduction.

45867 to 45869.

From Richmond, Australia. Presented by Mr. F. H. Baker. Received February 25, 1918.

45867. *ACACIA PYCNANTHA* Benth. Mimosaceae.

Golden wattle.

A rapid-growing tree, attaining a height of about 30 feet, the bark of which is used for tanning. The flowers, which are borne in clusters, are yellow; hence the name *golden wattle*. The tree has no soil prefer-

45867 to 45869—Continued.

ence, but is usually found on the poor sandy soil near the sea coast; here it serves also as a sand binder. The wood is tough and close grained, having a specific gravity of 0.83. The bark contains as high as 33.5 per cent of tannin, and the dried leaves have yielded as much as 15.16 per cent of tannic acid. The range is South Australia, Victoria, and southern New South Wales. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 312 and 365.)

45868. HAKEA ROSTRATA F. Muell. Proteaceæ.

An erect shrub, several feet in height, with glabrous branches. The terete leaves are smooth and rigid. The flowers are borne in sessile axillary clusters. The rugose fruit is 1 to 1½ inches long and three-fourths of an inch broad, recurved at the base, incurved from the middle, with a closely inflexed, conical beak. Found in Victoria and South Australia. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 508.)

45869. INDIGOFERA sp. Fabaceæ.

"A beautiful native shrub." (*Baker.*)

45870. ANNONA sp. Annonaceæ.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 26, 1918.

A species of *Annona*, originally from Colombia, the seeds of which, according to Mr. Safford, resemble those of *Annona sericea*.

45871 to 45881.

From Japan. Cuttings presented by Prof. T. Onda, Bureau of Horticulture, Imperial Agricultural Experiment Station, Okitsu, Shiznokaken, Japan. Received February 27, 1918. Quoted notes by Prof. Onda.

45871 to 45875. DIOSPYROS KAKI L. f. Diospyraceæ. Kaki.

45871. "1. *Gosho*. Medium-sized, rather flattened, yellowish red fruit with a pointed apex. Staminate flowers abundant. Not very fruitful in a wet climate."

45872. "2. *Tenjin-Gosho*. Large, rather square, round-pointed fruit with a beautiful crimson skin. No staminate flowers. Not very productive."

45873. "3. *Oku-Gosho*. (*Oku* means 'late,' but this variety is not so late in ripening.) Large, depressed-globose, crimson fruit, which often splits a little at the apex. Staminate flowers very few, but a very productive variety."

45874. "4. *Hana-Gosho*. Fruit above medium size, broadly ovate with a pointed apex; skin yellowish red. Staminate flowers very few, but fruit plentiful."

45875. "5. *Jiro*. Large, depressed-globose, crimson fruit, with four longitudinal grooves. This variety has no staminate flowers, but is quite productive.

"These varieties of the *Gosho* class usually have no black spots in their flesh; very scarce, if any."

45876 to 45881. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

45871 to 45881—Continued.

45876. "1. *Rinshu*. Medium-sized flowers with a light green calyx and white petals; large fruits with thick flesh; not very productive."

45877. "2. *Yoro*. Medium-sized flowers with a reddish brown calyx and light-red petals; bears large fruits with thick flesh and is very productive."

45878. "3. *Bungo*. Large flowers with reddish brown calyx and light-red petals; fruit of medium size with rather thick flesh; not very productive."

45879. "4. *Hana-ka-mi*. (Meaning 'good in flowers, aroma, and fruits.') Medium-sized light-red double flowers, having from 20 to 25 petals; fruits small, with medium-thick flesh; very productive."

45880. "5. *Shiro-Kaga*. Medium-sized flowers with reddish brown calyx and white petals; fruit small with medium-thick flesh; very productive."

45881. "6. *Ko-mume*. Medium-sized flowers with brownish red calyx and white petals; fruits very small, about the size of large peas, but with rather thick flesh; a very productive variety.

"As regards your inquiry about the fertilization of mume trees, we have not noticed any insects, as we have very few at the flowering time of *mume*; but as to what assists their fertilization we have not yet investigated. We do not think *mume* is self-sterile, as it commonly fruits very well, even when it stands singly."

45882 to 45885.

From Natal, Brazil. Presented by Mr. E. C. Green. Received February 27, 1918.

45882 to 45884. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean

Introduced for studies in the oil content of the various varieties of the castor-bean.

45882. A small seed with a light ground color and dark splotches.

45883. A medium-sized seed with a dark ground color and lines and splotches of darker color.

45884. A large seed, nearly white, with a few reddish brown markings.

45885. *STIZOLOBIUM ATERRIMUM* Piper and Tracy. Fabaceæ.

Mauritius bean.

"Enormous quantities of this seed are said to be produced on wild plants growing in the woods in Brazil." (Green.)

This is a very widely cultivated species and has been introduced into the United States from Brazil, New South Wales, Australia, Cochin China, Barbados, Mauritius, Java, and Ceylon. In our Southern States this plant grows to a very large size, but is so late that the pods barely mature. The extreme lateness prevents the wide cultivation of this species in the United States.

The vines are very strong and vigorous, with striate softly pubescent stems. The leaflets are very large, with sparsely appressed-pubescent surfaces. The purple flowers are borne in many-flowered, pendent

45882 to 45885—Continued.

racemes, 18 to 30 inches long. The black, sickle-shaped pods are about 4 inches long. The seeds, four or five in number, are oblong, black, and very shiny. (Adapted from *Bureau of Plant Industry Bulletin No. 179*, p. 18.)

45886. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Guatemala. Purchased by Mr. Herbert S. Austin at the request of Mr. Wilson Popenoe, of this office. Received March 2, 1918.

Secured for the purpose of testing the oil content of various varieties.

45887 and 45888.

From the city of Panama, Panama. Presented by Dr. Ramon Arias-Feraud. Received March 5, 1918.

45887. IPOMOEA sp. Convolvulaceæ. Morning-glory.

"Seeds of morning-glories that keep open the whole day." (*Arias-Feraud.*)

**45888. OPERCULINA TUBEROSA (L.) Meisn. Convolvulaceæ.
(*Ipomoea tuberosa* L.)**

A perennial, stout-stemmed herbaceous vine, climbing to the tops of the tallest trees. The leaves are large and compound, with seven oblong leaflets; and three to six yellow flowers are borne on a long peduncle. The fruit is a membranous round capsule, about an inch long, containing two to four large seeds which are covered with short black hairs. It is a native of Brazil. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Francaises*, pp. 398 and 567.)

45889 and 45890. CYDONIA OBLONGA Mill. Malaceæ. Quince.

From Murdock, Kans. Grafts presented by Mr. J. W. Riggs, of the Experiment Grounds. Received March 6, 1918.

Scions from trees of a variety sent to the Office of Foreign Seed and Plant Introduction by Prof. N. E. Hansen, from Samarkand, Russian Turkestan, May 24, 1898, and numbered S. P. I. 1123. Mr. Riggs states that this variety has yielded fine fruit at Murdock, while trees of standard quince varieties have not borne any fruit. The tree is hardy, not being injured in that section of Kansas by drought and heat.

45889. Scions grafted on apple stocks.

45890. Scions grafted on Japanese pear stocks.

45891. RUBUS MACROCARPUS Benth. Rosaceæ. Blackberry.

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de la Salle, Bogota, at the request of Mr. F. M. Chapman, Washington, D. C. Received March 7, 1918.

"In April, 1913, while on a visit to Colombia, I found this variety growing in a little posada called El Peñon in the Temperate Zone at an altitude of 9,600 feet, on the trail from Bogota to Fusagasuga. El Peñon is exceedingly wet, and this giant blackberry may be found only under the conditions which prevail there. It is not the *mora de Castilla*, a cylindrical berry which grows in profusion at 5,000 to 7,500 feet; but this berry is much larger, more nearly round, and shaped more like a strawberry. These berries are often 3 inches in length." (*Chapman.*)

45892 to 45898.

From Auckland, New Zealand. Presented by Mr. H. R. Wright, Avondale.
Received March 7, 1918.

45892. POMADERIS ELLIPTICA Labill. Rhamnaceæ.

"*Kumarahou*. A rare dwarf shrub belonging to the Auckland Province. This plant is difficult to transplant, but is easily raised from seed. It flowers when 2 years old and if kept well pinched back makes a glorious specimen, being covered in spring with a mass of yellow flowers. It grows on some of our poor clay lands of a close nature, similar to that where the heather grows." (Wright.)

A branching shrub, 4 to 8 feet high, with the young branches, leaves, and flower clusters covered with white or buff-colored stellate hairs. The ovate to oblong leaves are 2 to 3 inches long, and the cymes of yellow flowers, with crisp-margined petals, are clustered into large many-branched panicles. Native name *Kumarahou*, from *kumara* (a tuberlike root) and *hou* (growing deeply or strongly). (Adapted from Cheeseman, *Manual of New Zealand Flora*, p. 99, and from Laing and Blackwell, *Plants of New Zealand*, p. 236.)

45893 and 45894. × VERONICA ANDERSONII Lind. and Paxt. Scrophulariaceæ.

45893. A hybrid between *Veronica salicifolia* and *V. speciosa*. An ornamental shrub, with drooping, entire, thick, pale-green leaves, somewhat like those of phlox, and brilliant violet-blue flowers, sometimes whitened toward the base of certain racemes. This plant is an interesting combination of grace and majesty, elegance and hardiness. The handsome racemes are dense, erect, slightly nodding at the tip, and somewhat longer than the leaves. (Adapted from *Flore des Serres et des Jardins de Europe*, vol. 7, p. 35.)

45894. Variety *variegata*. A handsome ornamental shrub, with blue-purple flowers in long, slender, semierect racemes. For 30 or 40 years this *Veronica* has been largely propagated and used as a bedding plant for the sake of its clear variegation, the leaves having a broad, creamy white margin. Under this system of treatment the plant seldom or never flowered but produced an abundance of shoots and foliage, which was really what the flower-bedding gardener desired. By cultivating it in a pot, however, until the stems get fairly woody and the pot filled with roots, it flowers beautifully, making a handsome subject for the greenhouse or conservatory in winter. (Adapted from *The Gardening World*, vol. 23, p. 829.)

45895. VERONICA SALICIFOLIA Forst. Scrophulariaceæ.

Speedwell.

A very useful, gracefully ornamental species, forming a large bush 5 to 8 feet high, clothed with willow-shaped leaves up to 5 inches in length. During summer it bears profusely slender, pendulous racemes, often 6 inches or more long, of white, pink, or lilac-tinged flowers. (Adapted from *Gardening Illustrated*, vol. 37, p. 308.)

45896 and 45897. VERONICA SPECIOSA R. Cunn. Scrophulariaceæ.

Speedwell.

45896. One of the best of all the veronicas, for it is of vigorous habit, 3 to 5 feet high, forms a wide and shapely bush, and blooms well in autumn and early winter. It bears erect, dense racemes of

45892 to 45898—Continued.

purple or reddish purple flowers, but there are varieties with white, lilac, pink, blue, and red blossoms. As the racemes are some 3 inches long and borne from nearly every leaf axil on the upper parts of the shoots, the effect is very fine. (Adapted from *Gardening Illustrated*, vol. 37, p. 308.)

Received as *Veronica imperialis*, which seems to be a garden name for *V. speciosa*.

45897. Variety *kermisina*. A handsome dark form, the plants blossoming when in a young state, which is not often the case with *Veronica speciosa*. (Adapted from Loudon, *Encyclopedia of Plants*, p. 1546.)

45898. *VERONICA* sp. Scrophulariaceæ.

Speedwell.

Received as *Veronica lobeliaeflora*, for which name a place of publication has not been found.

45899. STIZOLOBIUM PRURITUM OFFICINALE Piper. Fabaceæ.

From Chinandega, Nicaragua. Presented by Mr. C. B. Sibley, Escuela de Agricultura. Received March 8, 1918.

"*Pica-pica*. From what I have observed of this plant it must be very much like the velvet bean of the Florida orchards. I have noticed that it is a very heavy producer of nitrogen nodules. They are very numerous and also quite large. This fact has been taken advantage of by the natives, so that they welcome the plant into the corn fields that lie fallow or resting. One other point in its favor is that the stem of the plant during the growing season does not become hard and woody, so that, used as a green manure, it would soon decay in the soil after being plowed under." (Sibley.)

45900. CONDALIA LINEATA A. Gray. Rhamnaceæ.

Piquillin.

From Oran, Argentina. Presented by Mr. S. W. Damon. Received March 9, 1918.

"The fruit from which I took these seeds was bought in the market of Jujuy. I have never seen it growing, but as bought it resembles a small-sized inferior grade of cherry." (Damon.)

A spiny, much-branched shrub with alternate, spatulate to oblong-ovate, sharply pointed, leathery leaves about half an inch long. The flowers have a 5-parted whitish calyx, but no petals. The oblong, 1-seeded fruits are borne singly or in pairs on short pedicels in the axils of the leaves. (Adapted from A. Gray, in *Botany of the U. S. Exploring Expedition*, vol. 1, p. 275.)

45901. PYRUS COMMUNIS L. Malaceæ.

Pear.

From Columbia, Mo. Cuttings presented by Dr. J. C. Whitten, College of Agriculture. Received March 12, 1918.

"The *Surprise* pear forwarded by Dr. Whitten, of the College of Agriculture, Columbia, Mo., is one of the most promising as a blight-resistant pear and may prove of economic importance as a stock for commercial varieties. As grown by Prof. Reimer at Talent, Oreg., it was one of the most vigorous of stocks and seemed to transmit this vegetative character to nearly all varieties of pears which were grafted or budded upon it. Its congeniality, in other words, is to be commended. Dr. Whitten says that the *Surprise* pear is apparently a pure

Pyrus communis. This variety is a large, vigorous grower. It early begins the formation of short, spurlike branches, which spread horizontally, with few of the upright rank shoots customary to Kieffer and other hybrids. The fruit is small, not much larger than Seckel. It is moderately late, ripening only a little ahead of Kieffer, and is of poor quality. The variety bears profusely, however. Dr. Whitten says that he does not remember having seen a trace of blight in any of the *Surprise* trees on his grounds, though they are growing in a pear orchard in which numerous susceptible varieties have died out entirely from blight and other varieties have blighted more or less every year." (B. T. Galloway.)

45902. ARUNDINARIA FALCATA Nees. Poaceæ. **Bamboo.**

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 12, 1918.

A slender bamboo growing to a height of 20 feet but not exceeding half an inch in diameter, having the young stems covered with a bluish white waxy coating soon turning yellowish green. The light-green striate-veined leaves are 4 to 6 inches long by one-third of an inch wide, with downy sheaths. The species is not very hardy, being a native of the lower slopes of the Himalayas in northwestern India. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 448.*)

Received as *Arundinaria gracilis*, which is now referred to *A. falcata*.

45903. ZEA MAYS L. Poaceæ. **Corn.**

From Argentina. Purchased from H. H. Marini & Co., Buenos Aires, through the American consul general. Received March 13, 1918.

An amber-colored variety of corn, obtained for experimental tests.

45904. LAGENARIA VULGARIS Seringe. Cucurbitaceæ. **Gourd.**

From Japan. Presented by Dr. L. H. Bailey, Ithaca, N. Y., who obtained them from Gov. H. Hiratsuka, Utsunomya, Japan. Received March 14, 1918.

"The largest gourd utensils I ever saw were at Utsunomya, Japan. I asked for seeds of them and have received a packet from Gov. H. Hiratsuka, of the prefecture. I am sending you some of these seeds, thinking that possibly you would like to have them grown at your Maryland or Florida stations, where the season will probably allow them to mature. Some of the gourds I saw in the market in Japan would hold, I should think, at least a peck." (Bailey.)

45905 to 45912.

From Venezuela and the West Indies. Collected by Mr. H. M. Curran, Laurel, Md., during an exploring trip made by him in 1917. Received March 14, 1918. Quoted notes by Mr. Curran unless otherwise noted.

45905. ACACIA sp. Mimosaceæ.

"From La Vela de Coro, Venezuela. A shrub or small tree, with ornamental red or purple wood."

45906. ACANTHORHIZA ACULEATA (Liebm.) Wendl. Phœnicaceæ. **Palm.**

"From Venezuela."

"A palm with a trunk 6 to 9 feet tall and 4 to 6 inches in diameter, armed with spiniform roots 3 to 4 inches in length. The leaves, forming a dense crown, are fan shaped, green above and silvery below, and about

45905 to 45912—Continued.

3 feet in diameter on petioles 18 inches long. The leaf bases are densely covered with woolly scurf, which splits into many strong fibers; and the branch inflorescence, about 2 feet long, is also densely covered with white woolly scurf. The smooth fruit, three-fourths of an inch long by five-eighths of an inch in diameter, is not edible." (*C. B. Doyle.*)

45907. *ACHRAS ZAPOTA* L. Sapotaceæ.

Sapodilla.

(*A. sapota* L.)

"From Curaçao, Dutch West Indies. A choice variety."

A small, symmetrical tree, 25 to 30 feet high, with leathery, dark-green, shiny leaves and round or oblong fruit which resemble in outward appearance a smooth-skinned brown potato. It is a native of tropical America, although cultivated in the Asiatic Tropics as well. When thoroughly ripe, the fruit is fine for eating, having a very thin skin inclosing a pale-brown, juicy pulp of delicious flavor. It is best propagated by cuttings, although it may be raised from seeds. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 133.)

See S. P. I. No. 44866 for previous introduction.

45908. *ANNONA MURICATA* L. Annonaceæ.

Soursop.

"From Curaçao, Dutch West Indies."

"A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves; large flowers with fleshy exterior petals; and very large, fleshy, green fruits with white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice and excellent jelly and preserves from the pulp. It is easily propagated from seeds or by budding." (*W. E. Safford.*)

See S. P. I. No. 44453 for previous introduction.

45909. *BAUHINIA* sp. Cæsalpiniaceæ.

"From Trinidad, British West Indies. Ornamental."

45910. *CERCIDIUM VIRIDE* (Karst.) Taub. Cæsalpiniaceæ.

"*Indjoe fino* or *Llaro*. From La Vela de Coro, Venezuela. Tree used as an ornamental; golden flowers. Suitable for planting in dry sections of the southern United States."

A thorny shrub or small tree, with compound opposite leaves, each divided into one or two pinnæ, which in turn are divided into five to eight pairs of oblong or somewhat ovate-oblong short-stalked notched leaflets; the orange-yellow flowers grow in short, loosely flowered clusters hidden in a tuft of leaves; the pod is oblong-linear, flatly pressed together, and membranous or somewhat leathery in texture. *Cercidium viride* is found in the hot steppes of Venezuela and New Granada, where the tree is called *quica* by the natives. It is also called *brea* on account of the resinous substance which covers the trunk and branches and which is used as a substitute for pitch. (Adapted from *Karsten, Florae Columbiae*, vol. 2, p. 25, pl. 113.)

45911. *LAGERSTROEMIA SPECIOSA* (Muenchh.) Pers. Lythraceæ.

(*L. flos-reginae* Retz.)

"From Trinidad, British West Indies. Ornamental."

A magnificent flowering plant which in the Tropics affords one of the most brilliant floral displays imaginable and which is made much use of

45905 to 45912—Continued.

in the gardens of Indian potentates and other places in the East. The flowers appear on axillary peduncles, usually forming panicles at the tips of the branches. The leaves are opposite and entire, oblong, glabrous, and dark green. The flowers are a beautiful shade of rose in the morning, deepening during the day until they become purple in the evening. It is a plant of large growth and is found from Malay to China. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 15, p. 77.)

45912. *TOLUIFERA* sp. Fabaceæ.

"An ornamental leguminous tree from Trinidad, British West Indies."

45913. ZEA MAYS L. Poaceæ.**Corn.**

From Peru. Procured by Mr. William F. Montavon, United States commercial attaché at Lima. Received March 15, 1918.

"No. 15. *Ojos de Lechuga*, Matibamba." (*Montavon*.)

A peculiarly marked variety, having a dull-yellow ground color overlaid with brown lines so as to resemble the grain on a panel of wood. Introduced for the experimental and breeding work of the Office of Corn Investigations.

45914. PINUS ARMANDI Franch. Pinaceæ.**Pine.**

From Formosa. Presented by Mr. G. Takata, director, Department of Productive Industries, Taihoku. Received March 16, 1918.

"A pine producing very large cones full of large, edible seeds which are eagerly collected by the priests in the temples; the cones supply an excellent fuel." (*F. N. Meyer*.)

For previous introduction, see S. P. I. No. 38468.

45915 to 45918.

From Panama. Presented by Sr. Ramon Arias-Feraud. Received March 16, 1918. Quoted notes by Sr. Arias-Feraud. Descriptions adapted from Cook and Collins, *Economic Plants of Porto Rico*.

"I am sending you a package containing seeds from different plants grown on my own plantation."

45915. ANACARDIUM OCCIDENTALE L. Anacardiaceæ.**Cashew.**

"Red cashew. Trees about 20 feet high, bearing fruits the third year."

A handsome quick-growing tree reaching a height of 40 feet, with large, entire, oval leaves; the wood is close grained, strong, and durable and is used for boat building. The cashew, like the poison ivy, possesses an acrid substance which is strongly irritant to the epidermis and the mucous membranes of human beings. The poisonous material, however, is not spread throughout the plant, but is mostly concentrated in the rather soft shell of the nut, which is borne upon a pear-shaped red or yellow fleshy receptacle 2 to 4 inches long. This receptacle is edible and quite harmless when ripe, having a very agreeable subacid taste in the raw state. It is also very good when cooked. The nut is kidney shaped or distinctly curved near the middle and contains a single large kernel of quite firm flesh, of fine texture and of delicate, very pleasant nutty flavor. No attempt should be made, however, to eat it in the raw state, on account of the poisonous juice of the shell, which must be driven off by the heat, so that roasting is an absolute necessity.

45915 to 45918—Continued.

45916. *ARTOCARPUS COMMUNIS* Forst. Moraceæ. Breadfruit.

"Chestnut breadfruit. The large fruit contains about 40 chestnuts which are fine to eat after being boiled in salted water."

45917. *BLIGHIA SAPIDA* Koen. Sapindaceæ. Akee.

"Akee fruit from India. Should not be used until the fruit opens, showing the seeds and the yellow edible portion. It is dangerous to eat the closed fruit, as it contains a poison which produces uncontrollable vomiting."

Valued in Jamaica as a highly flavored, wholesome food, the bright yellow, fleshy arillus being the part eaten. The arillus is prepared in various ways, often stewed in milk, and afterwards browned in a frying pan with butter. It is also boiled and mixed with salt fish, onions, and tomatoes as a breakfast food.

45918. *CHRYSOPHYLLUM CAINITO* L. Sapotaceæ. Caimito.

"Silk star-apple. Green color."

A tree up to 45 feet in height and a foot in diameter, bearing an edible fruit about the size of an apple. The wood is dark violet in color and is rather coarse, but is suitable for shingles and bowls and for general carpenter work.

45919. *RUBUS* sp. Rosaceæ. Blackberry.

From Colombia. Presented by Hermano Apolinar-Maria, Instituto de la Salle, Bogota, at the request of Mr. F. M. Chapman. Received March 19, 1918.

45920 and 45921. *SYRINGA* spp. Oleaceæ. Lilac.

From Rochester, N. Y. Presented by Mr. John Dunbar, Assistant Superintendent of Parks. Received February 19, 1918.

45920. *SYRINGA REFLEXA* C. Schneid.

A bush, 6 to 9 feet in height, growing at altitudes of 4,500 to 7,500 feet. The reddish flowers are borne in long pendulous inflorescences which give the species a distinct appearance quite different from that of all other lilacs. Found at Fanghsien, western Hupeh, China. (Adapted from *Sargent, Plantae Wilsonianae*, pt. 1, p. 297.)

45921. *SYRINGA TOMENTELLA* Bur. and Franch.

A bush, 1½ to 5 meters in height, forming thickets at altitudes of 9,000 to 10,000 feet. The flowers are white to rose-pink in color. Collected in western Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae*, pt. 1, p. 301.)

45922. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

From New York. Presented by Dr. Robert T. Morris, New York, N. Y. Received March 20, 1918.

Scions from a walnut tree sent to Dr. Morris by the Office of Foreign Seed and Plant Introduction under S. P. I. No. 17946. Mr. Frank N. Meyer, who collected this walnut in China, described it as a genuine paper-shelled walnut which sells for three times as much money as the hard-shelled varieties. The nuts can be shelled like peanuts.

45923. TELFAIRIA PEDATA (J. E. Smith) Hook. Cucurbitaceæ.

From East Africa. Presented by Mr. M. Buysman, Lawang, Java. Received March 20, 1918.

Mr. Charles Telfair, for whom the plant is named, says of it: "It is dioecious. The fruit is 3 feet long, 8 or 10 inches in diameter, and full of seeds as large as chestnuts (264 in one fruit), which are as excellent as almonds and have a very agreeable flavor; when pressed they yield an abundance of oil equal to that of the finest olives. It is a perennial plant and grows at the margins of forests, enveloping the trees with its branches, while its trunk is frequently seen with a circumference of 18 inches." Its name among the Indians of Zanzibar is *koumé*. (Adapted from *Curtis's Botanical Magazine*, pls. 2751 and 2752.)

For an illustration of the so-called "nuts" of this cucurbit, see Plate II.

45924. CERATONIA SILIQUA L. Cæsalpiniaceæ.

Carob.

From Valetta, Malta. Scions procured by Mr. Wilbur Kehlenger, American consul. Received February 13, 1918.

"The carob tree, or St.-John's-bread, is a handsome, slow-growing, leguminous tree with evergreen, glossy, dark-green pinnate leaves, forming a rounded top and attaining a great size. It grows well in the semiarid hills all around the Mediterranean, preferring limestone soils; it is sensitive to cold and does not succeed north of the orange-growing regions. The staminate and pistillate flowers are borne on different trees, and it is necessary, in order to insure a crop of pods, to have a considerable proportion of staminate trees in the plantation. The large pods, which are chocolate colored when ripe, are usually borne in great quantities and contain an abundance of saccharine matter around the smooth, hard seeds. Italian analyses show the pods to contain more than 40 per cent of sugar and some 8 per cent of protein, more than 75 per cent of the total weight being digestible. Unusually large trees may reach a height of 60 feet, with a crown 75 feet in diameter, and they may produce as high as 3,000 pounds of pods. These pods are a concentrated feed for horses, milk cows, and fattening stock; to a certain extent they replace oats for horse feed. Sirups and various sweetmeats are sometimes prepared from the carob pods; they are relished by most children and are sometimes offered for sale by fruit dealers in America." (W. T. Swingle.)

For previous introduction, see S. P. I. No. 3112.

45925. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918.

A shrub or small tree, native to New South Wales, Australia, which has compound leaves composed of one to three pairs of shining, coarsely serrate, oblong leaflets 2 to 4 inches long and very small flowers in short axillary panicles; the two to three lobed capsules inclose globose seeds with fleshy arils. (Adapted from A. Gray, *U. S. Exploring Expedition*, vol. 15, *Botany*, p. 258, as *Cupania subcinerea*.)

See S. P. I. No. 44520 for previous introduction.

45926. PITHECOLOBIUM BIGEMINUM (L.) Mart. Mimosaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 25, 1918.

A medium-sized tree found on the lower slopes of the Himalayas up to an altitude of 3,000 feet and eastward to the Philippines. The bipinnate leaves are divided into two to four pinnæ, each bearing four to six coriaceous leaflets 4 to 6 inches long. The small heads of cream-colored flowers are borne in large axillary and terminal panicles, and the spirally twisted reddish pods are 3 to 6 inches long. (Adapted from *Cooke, Flora of Bombay, vol. 1, p. 455.*)

Received as *Inga bigeminum*, which is now referred to *Pithecolobium*.

45927. LATHYRUS SATIVUS L. Fabaceæ. Bitter vetch.

From North Bend, Wash. Presented by Mr. J. E. Erdmand. Received March 25, 1918.

"Wedge peas obtained from local Indians. I have found these peas when dry are excellent for cooking. The foliage is long and grasslike, and the flowers are white. Very hardy and productive." (*Erdmand.*)

**45928 and 45929. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ.
(*Psophocarpus tetragonolobus* DC.) Goa bean.**

From the Philippine Islands. Presented by the College of Agriculture, Los Banos. Received March 25, 1918.

"When these square green pods with 'frills' at each corner are 'strung' (just as snap beans are treated) and cooked in the same way, they make an excellent vegetable. At Brooksville, Fla., the season may be too short for their profitable culture, but the plant deserves a wider test in southern Florida. Its flowers are very attractive and would almost pass for sweet peas." (*Fairchild.*)

45928. *Big Calamismus*. 207-F-5.

45929. *Ilocano Pal-lang*. 6337-F.

45930 to 45939. CITRUS spp. Rutaceæ.

From China. Scions collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45930. CITRUS NOBILIS Lour. King orange.

"(No. 1287. Changyang, Hupeh, China. December 10, 1917.) *Tsung pi gan* (furrow skin orange.) A mandarin of medium size, with wrinkled skin and of a beautiful deep-orange color; very juicy, of slightly bitterish flavor, and containing few seeds. In general, a good mandarin of the tonic class."

45931. CITRUS ICHANGENSIS Swingle. Ichang lemon.

"(No. 1288. Changyang, Hupeh, China. December 10, 1917.) *Hsiang yuan*. A large variety of Ichang lemon, mostly shipped to Shasi, a run of a few days down the river. The fruits sell wholesale at 1 cent (Mexican) apiece and retail at 2 to 3 cents (Mexican), according to size and supply. The Chinese, with their great dislike to sour fruits, never use these lemons in beverages, but employ them only as room perfumers or carry them about to take an occasional smell at them, especially when passing malodorous places. Locally the rind is candied in a limited way

45930 to 45939—Continued.

and resembles orange peel in flavor and appearance. The fruits ripen during the month of October; since they do not possess long-keeping qualities, they disappear very quickly. In fruit stores in Ichang they all have disappeared during December. The trees grow to medium large size and resemble pummelos in general appearance, though they are less massive in outline and the foliage is of a lighter hue of green. The trees are densely branched and have large spines on the main branches and small ones even on the bearing branchlets. The foliage suffers a good deal from caterpillars, the trunks are attacked by borers, and maggots are occasionally found in the fruit. Foreign residents in and around Ichang make from these lemons a very fine lemonade, which is of a more refreshing quality than the ordinary kind; they are also used in pastry, sauces, and preserves. On the whole it seems that this Ichang lemon is a very desirable home fruit for those sections of the United States that are adapted to its culture, especially the South Atlantic and Gulf States. It may also prove to be hardier than any other citrus fruit of economic importance. Around Ichang trees have withstood temperatures of 19° F."

45932. CITRUS NOBILIS Lour.

King orange.

"(No. 1289. Changyang, Hupeh, China. December 10, 1917.) *Chun gan* (spring orange) and *Loba gan* (turnip orange). A large mandarin of a fine light-orange color, with a corrugated skin; it contains few seeds and has a sweet refreshing flavor."

45933. CITRUS NOBILIS DELICIOSA (Ten.) Swingle.

Tangerine.

"(No. 1290. Changyang, Hupeh, China. December 10, 1917.) *Chuan chü tse* (Szechwan orange). A large flat tangerine of bright reddish color, with very loose skin. Very sweet but somewhat flat in taste. It is a poor keeper and shipper, but on account of its attractive appearance is very much in demand. It is supposed to have originated in Szechwan."

45934. CITRUS sp.

"(No. 1291. Changyang, Hupeh, China. December 10, 1917.) *Ba ehr gan* (handle orange). An orange with the color and shape of a lemon, of fresh, sweet taste, and containing many seeds."

45935. CITRUS SINENSIS (L.) Osbeck.

Orange.

"(No. 1292. Changyang, Hupeh, China. December 10, 1917.) *Hsiang gan* (fragrant orange). An orange of medium size, golden-orange color, firm flesh, and fresh, sweet taste, and containing, as a rule, a fair number of small seeds."

45936 and 45937. CITRUS ICHANGENSIS Swingle.

Ichang lemon.

45936. "(No. 1293. Ichang, China. December 20, 1917.) A coarse variety of Ichang lemon, with a thick, dark-yellow skin, and containing very many large seeds. Possibly a hybrid with a pummelo. Obtained from the garden of the British Consulate at Ichang."

45937. "(No. 1294. Ichang, Hupeh, China. December 30, 1917.) An especially fine variety of Ichang lemon, very juicy and having a delightful fragrance. It makes a superior lemonade. The tree is of a somewhat drooping habit, and the foliage is very dense. Obtained from the garden of the British Consulate at Ichang."

45930 to 45939—Continued.

45938. CITRUS NOBILIS Lour.

King orange.

"(No. 1295. Ichang, Hupeh, China. December 28, 1917.) *Pao gan* (spongy, inflated, or vesicular orange). A medium large mandarin with a very wrinkled skin of beautiful deep-orange color; very juicy, and of an agreeably bitter flavor; seeds few. A fruit well worth cultivating in the United States as a tonic mandarin. Obtained from the garden of the Church of Scotland Mission."

45939. CITRUS ICHANGENSIS Swingle.

Ichang lemon.

"(No. 1296. Ichang, China. December 28, 1917.) A large variety of Ichang lemon, said to be a very heavy bearer; fruits medium large. Obtained from the garden of the Church of Scotland Mission."

45940. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.

Lyon bean.

From Rhodesia, Africa. Presented by Mr. J. O. S. Walters, Director of Agriculture, Salisbury. Received March 25, 1918.

"Lyon or Dedman's bean. One of the principal advantages that this variety has over the Florida velvet bean is the absence of the fine prickly hairs on the stem and leaves, which make the curing of the latter plant for hay a difficult operation. It also seems to be more resistant to frost. For these reasons Dedman's bean, or as it is more commonly known here, stingless velvet bean, is gradually replacing the Florida variety." (*Walters.*)

45941 to 45951.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer of the Department of Agriculture. Received February 25, 1918. Quoted notes by Mr. Meyer.

45941. CITRUS AURANTIUM L. Rutaceæ.

Sour orange.

"(No. 1297. Tsentsze, near Ichang, China. December 22, 1917.) A large orange with the shape and color of a lemon; quite juicy but having a bitter aftertaste. The fruits are said to acquire their best flavor in spring. Possibly a hybrid between an orange and a pummelo. Obtained from the garden of the R. C. Boys' Training School, across the Yangtze River."

45942. SCHIZOPHRAGMA sp. Hydrangeaceæ.

"(No. 1299. Tsungchiatsui, Hupeh, China. Altitude 3,000 feet. December 14, 1917.) An evergreen vine found trailing over rocks and boulders in a semishady place. The foliage is medium small and leathery, like that of a daphne. Apparently quite rare. To be tested under protection from extremes of sun and frost."

45943. ULMUS sp. Ulmaceæ.

Elm.

"(No. 1300. Totzewan, Hupeh, China. December 12, 1917.) An uncommon elm growing to a large size and found in mountain districts at low altitudes. Young branches often corky, bark of old trunks grayish brown and fissured. Possibly a desirable shade and avenue tree for mild-wintered regions."

45944. PRUNUS GLANDULOSA Thunb. Amygdalaceæ.

Plum.

"(No. 1301. Ichang, China. December, 1917.) A shrubby flowering plum growing to a height of 3 to 5 feet. It can be trained to one stem.

45941 to 45951—Continued.

but grows naturally into a densely branched bush. It bears masses of double rose-colored flowers in May and is a fine little shrub for borders and near door entrances in those regions where it is perfectly hardy. Obtained from the garden of the Customs Compound."

45945. CITRUS ICHANGENSIS Swingle. Rutaceæ. **Ichang lemon.**

"(No. 2455a. Santsako, Hupeh, China. November 24, 1917.) A very spiny wild tree, found in a field on a mountain slope at an altitude of about 4,000 feet above sea level. Height 18 feet; foliage dense, but individual leaves small; winged petioles quite minute. Fruits fairly juicy, the size and shape of tangerines; rind of bright-yellow color and corrugated, but not excessively so; odor very pleasing. Seeds large but not very numerous. In regions where this wild Ichang lemon occurs one also finds coir palm, loquats, bamboos, large-leaved evergreen privets, and *Cunninghamia lanceolata*. Temperatures probably never go lower than 10° F. The local name of this wild lemon was given me as *Chü gan tze*, meaning 'maggot orange,' since maggots are said to be attracted by the very sour juice. No other cultivated citrus fruits occurred near-by, though a few hundred feet lower down several large pummelo trees were seen. The natives have little use for the fruit; they keep a few in the room to perfume the air, and occasionally they use the dried rind in a medicinal tea. In breeding experiments it may be of value, since it seems to be the hardiest of all the true species of citrus (*Poncirus trifoliata* not being a true citrus)."

45946. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. **Yang-tao.**

"(No. 2456a. Near Lungtoping, Hupeh, China. November 23, 1917.) A variety of *yang-tao* bearing smooth fruits of various sizes ranging from that of a gooseberry to a good-sized plum. It possesses a good flavor, though setting one's teeth on edge, as does the use of nonselect pineapples and some wild blueberries. This fruit really is of high promise for the United States and especially so for the mild-wintered sections. It should preferably be grown as an arbor vine. In its native habitat one finds it bearing most heavily when climbing over low scrub and rocks on northeast exposures, where the plants are subjected occasionally to strong twisting winds, which seem to check their tendency to excessive vegetative growth. Where this *yang-tao* occurs one also finds around the farmsteads coir palms, loquats, bamboo clumps, tea plants, tung-oil trees, etc. The fruits when properly handled keep fresh for a long time; they ship and keep especially well after having been subjected to a slight frost. As to their uses, they can be eaten out of hand or as a dessert when skinned, sliced, and sprinkled over with sugar; excellent preserves can also be made from them. The Chinese, with their extensive vegetable diet and their abhorrence of sour fruits, do not care for this fruit and let it waste mostly; Caucasians, however, seem universally to enjoy highly this unique berry, which combines the flavor of the gooseberry, strawberry, pineapple, guava, and rhubarb. Possibly in some of the Southern States new industries could be built up by cultivating this fruit for the northern city markets. The meaning of *yang-tao* is 'male peach,' which is as inappropriate as our name *pineapple* is for the ananas."

45947 and 45948. CASTANEA MOLLISSIMA Blume. Fagaceæ. **Chestnut.**

45947. "(No. 2457a. Ichang, Hupeh, China. December, 1917.) *Ta pan li tze* (large board oak seeds), a classical name for the chest-

45941 to 45951—Continued.

nut. Large Chinese chestnuts from trees cultivated in neighboring mountain districts."

45948. "(No. 2458a. Wantiaoshan, Hupeh, China. November 30, 1917.) *Wa li tze* (bean chestnut). Chestnuts from wild trees occurring at altitudes between 3,000 and 6,000 feet above sea level. There is considerable variation among the trees and bushes from which these seeds were collected, and perhaps there is more than one species among them. If so, there may be the chinquapin, *Castanea seguinii*, which seems to be wholly resistant to the chestnut blight, *Endothia parasitica*. Purchased from a local collector."

45949. *CASTANEA SEGUINII* Dode. Fagaceæ. Chinquapin.

"(No. 2459a. Ichang, Hupeh, China. November 16, 1917.) *Moh pan li* (hairy board oak). A shrubby chinquapin, occasionally growing into a tree 25 to 40 feet high; it occurs on mountain slopes here and there in Central China, often in great quantities. Sprouts only 2 feet high often produce seeds. It appears to be totally resistant to the bark fungus, *Endothia parasitica*, and may be of considerable value in breeding experiments such as Dr. Walter Van Fleet has been conducting for several years. This species seems to be more moisture loving than *Castanea mollissima*, but it grows well on the most barren mountain slopes."

For an illustration of a fruiting branch of this shrub, see Plate III.

45950. *EUCOMMIA ULMOIDES* Oliver. Trochodendraceæ.

"(No. 2460a. Suilokua, Hupeh, China. November 13, 1917.) *Tu chung shu* (ease of heart tree) and *Sheh mien shu* (floss silk tree). The so-called Chinese rubber tree, which has proved to be more hardy and more drought resistant in the United States than was at first expected. In China the bark, with its silky threads (when broken), is used as a high-class drug."

45951. *CITRUS ICHANGENSIS* Swingle. Rutaceæ. Ichang lemon.

"(No. 2461a. Ichang, Hupeh, China. December, 1917.) Cultivated strains of Ichang lemons. To be sown to obtain bearing trees for all-round purposes. There is considerable variation in the Ichang lemon, and some seedlings might produce remarkably good fruits."

45952. *TAMARIX APHYLLA* (L.) Karst. Tamaricaceæ. Athel.
(*T. articulata* Vahl.)

From Tucson, Ariz. Cuttings presented by Prof. J. J. Thornber, University of Arizona. Received March 26, 1918.

"The *athel* or *evergreen tamarisk* of northern Africa. Trees with erect habit and ascending branches. Branchlets numerous, threadlike, drooping, bluish green, and appearing as if jointed or segmented on account of the character of the small leaves. The plants grow readily from cuttings, which may be made at almost any season. Cuttings often develop into trees 6 to 10 feet tall in a year, while trees 4 to 6 years old under favorable conditions attain heights of 40 to 50 feet. Thrives in sandy and calcareous soils and in those with considerable alkali and is very drought and heat resistant. Young trees with well-matured wood were only slightly injured with a temperature of 6° F. Excellent for windbreaks and very popular on account of its rapid growth, symmetrical form, and evergreen foliage." (J. J. Thornber.)

"In March, 1917, Prof. J. J. Thornber, a collaborator of the Office of Crop Physiology and Breeding Investigations, sent to Mr. Bruce Drummond, superintendent of the date gardens at Indio and Mecca, Calif., a few unrooted cuttings about 1 foot long and one-fourth to one-half inch in diameter, of *Tamarix articulata*, received in March, 1909, by Prof. Thornber from Dr. L. Trabut, Government botanist of Algiers. These cuttings made phenomenal growth and by the fall of 1918 were attracting attention all over the Coachella Valley, the original cuttings then being, some of them, more than 20 feet high. This species, called athel by the Arabs, is an excellent windbreak provided the lower branches are not cut off. It grows so rapidly that it makes effective windbreaks inside of two years. After a growth of five years the original trees are several of them well over 50 feet high, having a maximum diameter at the ground of 14 to 17 inches. Without question this is one of the most important windbreaks ever found for use in the great irrigated valleys of the Southwest.

"This species, unlike many other species of *Tamarix*, is gray-green in color, evergreen, and pyramidal in shape, making a very handsome ornamental tree, especially when young.

"The athel not only grows very rapidly, but has hard wood which when dry makes excellent fuel. Prof. S. C. Mason reports that in Egypt this wood is prized by the Arabs for construction purposes, as it is not attacked by borers such as so greatly damage acacia and other hardwoods in Egypt. Dr. Trabut informed me in 1899 that it was the largest and most important tree of the Sahara Desert, frequently attaining a circumference of 6 feet and rarely as much as 17 feet.

"To Mr. Bruce Drummond belongs the credit for having discovered the great value of this species for windbreaks and for ornamental plantings in the hot, irrigated valleys of the Southwest. The original plantings of this species at Tucson, Ariz., made much slower growth and had not made obvious the extraordinary value of this species as a windbreak in the date-growing regions of the Southwest. Because of Mr. Drummond's prompt recognition of the value of this species and active dissemination of cuttings, it is estimated that 25,000 trees are now growing in the Coachella Valley alone, all propagated from less than a dozen original cuttings sent to Mr. Drummond by Prof. Thornber in 1917.

"In March, 1899, when I had the good fortune to make the acquaintance of Dr. L. Trabut, the eminent physician, botanist, and agriculturist of Algeria, he called my attention to this important tree and gave me cuttings from the trees growing in the botanical garden at the University of Algiers, together with information which was published in Inventory No. 7, under No. 3343. Unfortunately, the steamship *Strathleven* on which I shipped this material on March 6, 1899, did not proceed directly from Algiers to New York, as the captain expected, but was ordered back to Smyrna and spent nearly three months in making the trip from Algeria to New York. As a result, many of the plants, among them *Tamarix articulata*, died on the way to this country.

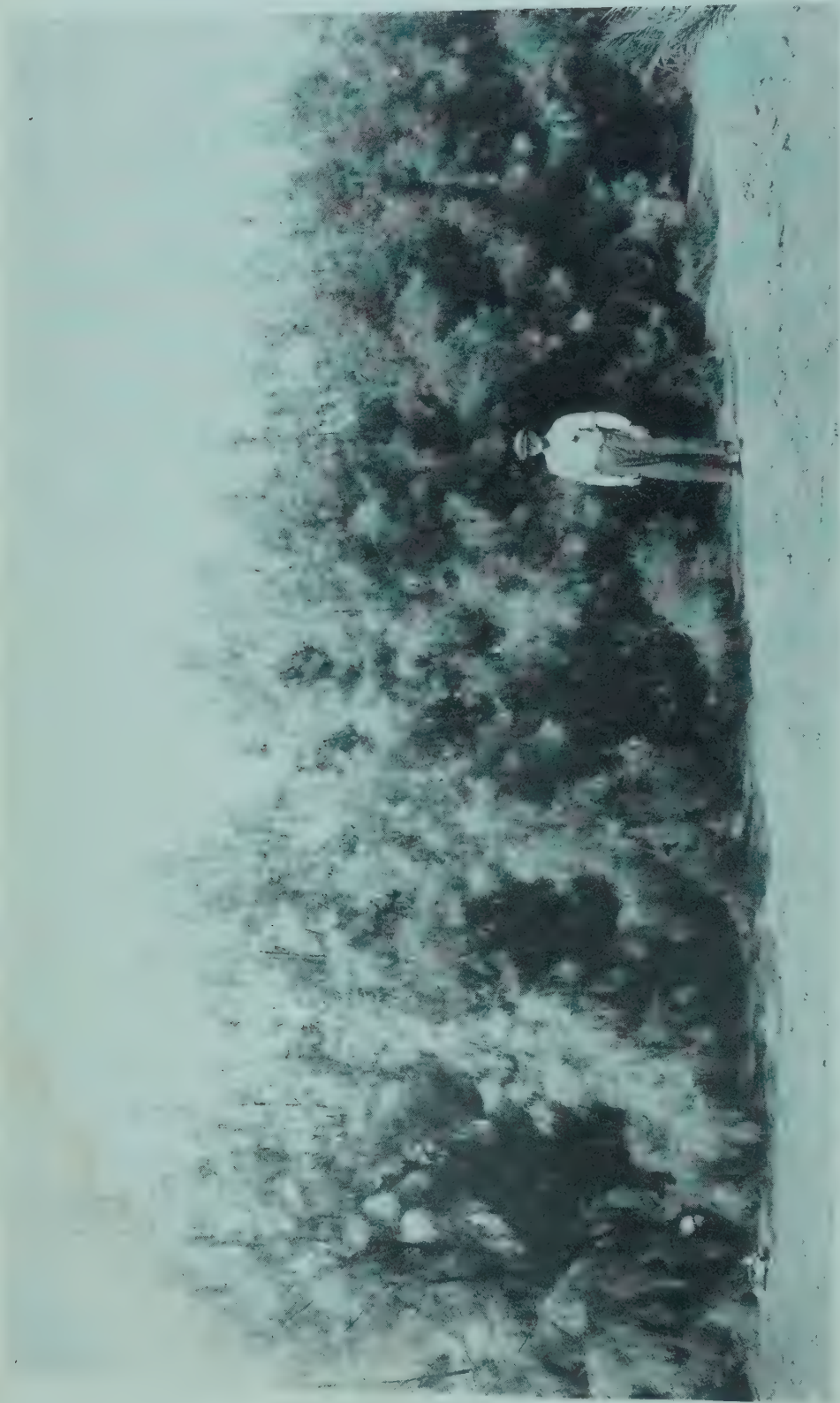
"The spectacular character of this extraordinary plant and its rapid utilization in a practical way is a proof of the value of thorough botanical studies such as Prof. Thornber has been making on *Tamarix* for some years past. Doubtless most of the species are of little practical value, but among numerous untested species which Prof. Thornber obtained was the athel, which promises to be worth millions to the farmers of the southwestern United States." (*Walter T. Swingle.*)

For an illustration showing the use of the athel tree as a windbreak, see Plate IV.



FRUITING BRANCH OF A NEW DISEASE-RESISTANT CHINQUAPIN FROM CHINA.
(*CASTANEA SEGUINII* DODE, S. P. I. NO. 45949.)

Three important facts have been established in regard to the chestnut bark disease: First, that all species of *Castanea* are not equally susceptible to the fungus; second, that hybrids between the different species are fertile; and, third, that the factor which produces immunity, whatever that is, appears to be heritable and by breeding and selection can be incorporated with other characters such as size and quality of the nut, size of the tree, etc. This Chinese chinquapin, occurring near Ichang, is a shrubby species, occasionally growing to 40 feet in height. Frank N. Meyer, who discovered the chestnut bark fungus, *Endothia parasitica*, in China, reports this species as apparently totally resistant to the disease. It grows well on barren mountain slopes but appears to be more moisture loving than the chestnut, *Castanea mollissima*. Introduced primarily for breeding purposes. (Photographed by Frank N. Meyer, Tzwehuhsien, Shensi, China, September 1, 1914; P1224-F.)



A WINDBREAK OF ATHEL PROTECTING A DATE GARDEN AT INDIO, CALIF. (*TAMARIX APHYLLA* (L.) KARST., S. P. I. No. 45952.)

The photograph here reproduced was taken only 18 months after the unrooted cuttings were planted. The athel branches widely near the ground and makes an effective windbreak by the middle of the second summer after the cuttings are planted. It roots deeply and so does not injure crops grown near by. It is the most promising windbreak yet found for the hot irrigated valleys of the Southwest, and it is, in addition, a very handsome evergreen ornamental, gray-green in color, of upright pyramidal growth. This species was introduced by Prof. J. J. Thornber, Director of the Arizona Agricultural, Experiment Station. The cuttings were sent to him in March, 1909, by Dr. L. Trabut, Government Botanist of Algeria. The great value of this species as a windbreak, especially for date orchards, was discovered by Mr. Bruce Drummmond, Superintendent of the Government Date Garden, Indio, Calif. (Photographed by Mr. Peter Bisset, Indio, Calif., October 10, 1919; P25993FS.)

45953. SOLANDRA LONGIFLORA Tussac. Solanaceæ.

From Sydney, New South Wales. Plants presented by Mr. J. H. Maiden, director, Botanic Gardens. Received March 26, 1918.

A West Indian evergreen shrubby vine, with ovate to obovate sharply pointed leaves on purplish petioles and yellow fragrant flowers usually a foot long. If left untrimmed it is a rampant climber, but it can be grown as a dwarf shrub by constant pruning. It is an adaptive plant, as it grows well in the driest and poorest places and does not appear to object to gross feeding. The foliage of this plant produces a valuable drug called *solandrin*, which has the same active principles as atropin derived from the leaves and roots of *Atropa belladonna* L. The best method of propagation is by cuttings, which should be taken from the flowering branches just after the flowering season is over and planted in a well-drained light sandy soil. (Adapted from *The Agricultural Gazette of New South Wales*, vol. 28, p. 670.)

45954. ACACIA CATECHU (L. f.) Willd. Mimosaceæ. **Catechu.**

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received March 26, 1918.

A medium-sized tree, with opposite, recurved spines and bipinnate leaves made up of 10 to 40 pairs of pinnæ, each bearing 30 to 50 pairs of linear leaflets about one-fourth of an inch long. The spikes of yellow flowers are solitary or fascicled, and the flat rich brown pods are reticulate veined. A powerful astringent extract prepared from the wood is the catechu of medicine and the cutch of tanning. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 189, and *Lyons, Plant Names, Scientific and Popular*, p. 9.)

45955. ANNONA RETICULATA L. Annonaceæ. **Custard-apple.**

From Colombia. Presented by Mr. W. O. Wolcott, Medellin. Received March 27, 1918.

"The tree grows about 15 feet high, is very thrifty, thriving best in a hot climate from sea level to about 3,000 feet altitude, and apparently wants rich soil and plenty of moisture. The fruit is about the size and shape of a bullock's heart and has a thin, light greenish yellow skin. It is cut open and eaten with a spoon, there being no core, though many seeds. The flavor is very sugary and fine." (*Wolcott*.)

45956 to 45964.

From Peradeniya, Ceylon. Presented by Mr. George F. Mitchell, Washington, D. C., and procured (except No. 45964) at the Botanical Gardens, near Kandy, Ceylon. Received March 18, 1918.

45956. ARECA TRIANDRA Roxb. Phœnicaceæ. **Palm.**

A medium-sized palm, native to India, reaching a height of 25 feet, usually having several trunks and sending out basal offshoots. The trunks are cylindrical, and each bears a crown of pinnate leaves 4 to 6 feet long. The orange-scarlet fruits are about the size of an olive. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 388.)

45957. CALYPTROCALYX SPICATUS (Lam.) Blume. Phœnicaceæ. **Palm.**

This stately palm, native to Amboina and other islands of the Molucca group, attains a height of 40 feet. The pinnate leaves have valvate leaflets with reflexed margins, and the flowers, arranged on long spike

45956 to 45964—Continued.

like spadices, produce orange-colored 1-seeded fruits. The wood is used for timber, and the seeds serve as a substitute for betel nuts. (Adapted from *Gardeners' Chronicle*, June, 1870, p. 765.)

45958. *DYPSIS MADAGASCARIENSIS* W. Wats. Phœnicaceæ. **Palm.**

A graceful Madagascar palm, about 15 feet high, with leaves 10 feet long. The pinnate leaves, with 18-inch segments arranged in fascicles of six or eight, seem to be arranged on the stem in threes, giving it a triangular appearance. This arrangement of the leaves and the fascicled arrangement of the leaflets is peculiar to the genus *Dypsis*, not being found in any other pinnate-leaved palms. (Adapted from *Gardeners' Chronicle*, new ser., vol. 24, p. 394.)

45959. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. **Oil palm.**

The fleshy outer layer and the kernels of the fruit each yield a commercial oil. Palm oil, that from the fleshy outer layer, is used in the manufacture of soap and candles; white or nut oil, that from the kernels, is used for making margarine or artificial butter. Palm oil is an important food product which is utilized in Brazil by all classes of people. (Adapted from note of *Dorsett*, *Shamel*, and *Popenoe*.)

For previous introduction, see S. P. I. No. 45766.

45960. *LATANIA COMMERSONII* Gmel. Phœnicaceæ. **Palm.**

An unarmed palm from Mauritius, 40 feet high, having leaves with petioles 4 to 6 feet long, the fan-shaped blades being about 5 feet in diameter and divided into lanceolate-acuminate segments 2 feet long by 3 inches wide. It is a particularly striking palm, the long, smooth petioles and the ribs of the fanlike leaves being colored a bright crimson, which is especially brilliant in the young foliage. (Adapted from *Baker*, *Flora of Mauritius and the Seychelles*, p. 381.)

45961. *ONCOSPERMA FASCICULATUM* Thwaites. Phœnicaceæ. **Palm.**

A spiny palm, 40 feet or more in height and 6 inches in diameter. The leaves, 18 feet in length, are made up of lanceolate long-pointed leaflets 18 inches long by 2 inches broad. The paniculately branched spadix, 2 feet long, bears large numbers of black-purple fruits about half an inch in diameter. This palm is a native of the Central Province of Ceylon, where it grows from sea level to an altitude of 5,000 feet. (Adapted from *Hooker*, *Flora of British India*, vol. 6, p. 415.)

45962. *ONCOSPERMA FILAMENTOSUM* Blume. Phœnicaceæ. **Palm.**

A stoloniferous palm with a trunk 30 to 40 feet high, armed with long black spines. The drooping pinnate leaves are 10 to 12 feet long, with narrow acuminate, coriaceous leaflets 2 feet long. The pendulous red-purple fruiting spadix is about 2 feet long and bears small globose fruits one-third of an inch in diameter. This species is found in swamps in the Malay Peninsula and also in Borneo and Cochin China. (Adapted from *Hooker*, *Flora of British India*, vol. 6, p. 415.)

45963. *DENDROCALAMUS GIGANTEUS* Munro. Poaceæ. **Bamboo.**

One of the largest of the bamboos, growing to a height of 100 feet, with a stem diameter of 8 inches, the stem walls being half an inch thick. It is probably indigenous in the hills of Martaban and is cultivated in Burma and also in most tropical countries. The stems are used for posts and rafters and for piping water. (Adapted from *Brandis*, *Indian Trees*, p. 678.)

45956 to 45964—Continued.**45964.** *MAGNOLIA GLOBOSA* Hook. f. and Thoms. Magnoliaceæ.

"From Lloyd Botanical Garden, Darjiling. I obtained seed of *Magnolia globosa*, which is found at 10,000 feet elevation and requires a moist climate." (*Mitchell*.)

A small tree with brown branches and ovate leaves 9 inches long by 6 inches wide. The globose flower buds, which appear with the young leaves, are about 2 inches in diameter and open into fragrant white flowers 5 inches across. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 41.)

45965. *NEPHROSPERMA VAN-HOUTTEANUM* (Wendl.) Balf. f. Phœni-
caceæ. **Palm.**

From Ivoloïna, Madagascar. Presented by Mr. Eugene Jaeglé, director, Madagascar Agricultural Experiment Station, through Mr. James G. Carter, American consul, Tananarivo. Received March 23, 1918.

A palm about 35 feet tall with a trunk 6 inches in diameter, found in open places and along streams up to an altitude of 1,000 feet in the Seychelles Islands. The leaves, 5 to 7 feet long, are divided into pinnate segments 3 to 4 feet long, broad segments alternating irregularly with narrow ones, the terminal segments being joined together. The orange-red fruits are borne in clusters 3 to 4 feet long. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 386.)

45966 and 45967. *CYMBOPOGON MARTINI* (Roxb.) Stapf. Poaceæ.
(*Andropogon martini* Roxb.) **Rusa-oil grass.**

From India. Presented by Mr. R. S. Hole, Forest Botanist, Forest Research Institute and College, Dehra Dun. Received March 28 and 29, 1918.

A stout perennial grass found in northern India. It grows to a height of 6 feet and has long, perfectly smooth leaves of a soft delicate texture and rich green color. The slender panicles, 6 to 12 inches long, turn to a bright reddish brown color in ripening.

The distinction between the two kinds of Rusa oil procured from this grass, viz, *motia* and *sufia*, which the distillers of Khandesh and the neighboring districts recognize, apparently depends on similar conditions, although the accounts concerning them are to some extent conflicting. The authors of the *Pharmacographia Indica* (vol. iii, p. 558) say: "The oil distillers in Khandesh call the grass *motiya* when the inflorescence is young and of a bluish white color; after it has ripened and become red it is called *sufiya*. The oil obtained from it in the first condition has a more delicate odor than that obtained from the ripened grass."

On the other hand, Mr. E. G. Fernandez reports in a letter to Kew: "The *motia* species (or variety) is usually confined to the higher slopes, while the *sufia* grass is more common on the plains and on the plateau land in the hills; but they are not infrequently found growing together. The *sufia* is much more strongly scented, but the odor of *motia* is preferred, and this latter commands double the price of the former." The samples of both forms supplied by Mr. Fernandez do not show any morphological differences, and as to age, some of the *motia* samples are in a more advanced stage than the *sufia*. (Adapted from *Stapf, The Oil Grasses of India and Ceylon*, in *The Kew Bulletin of Miscellaneous Information*, 1906, p. 341.)

The letter accompanying these seeds stated that both *sufia* and *motia* were being sent but the packets were not labeled.

45968. VITIS VINIFERA L. Vitaceæ. Grape.

From Tokio, Japan. Cuttings purchased from the Tokio Plant, Seed, & Implement Co. Received March 29, 1918.

"*Koshu*. A very sweet variety of grape which seems to be especially suited to the Tokio climate." (*F. N. Meyer.*)

45969. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. Pai ts'ai.

From Peking, China. Procured by Dr. Yamei Kin. Received March 2, 1918.
A selection of a northern strain.

45970 and 45971.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton.
Received March 30, 1918. Quoted notes by Mr. Hamilton.

45970. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

"Chinese peanuts. They grow quite a large upright leafy top and could be cut with a mowing machine for fodder. The nuts are produced closely clustered around the base of the stem."

45971. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

"*General Grant* sweet potato which, to our fancy, is absolutely the best variety for the table. As a rule, the vines do not run very much."

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FOREIGN-PLANT INTRODUCTION MEDAL.

The work of Mr. Frank N. Meyer, Agricultural Explorer of the Office of Foreign Seed and Plant Introduction of the Bureau of Plant Industry for 13 years, is mainly recorded in the pages of these inventories. His descriptions of plant material which he discovered and sent in close with this fifty-fifth number of the inventories, and it seems appropriate to include in it a cut of the medal which his associates had struck and which is presented each year for distinguished service in the field of plant introduction. This has been made possible by means of a bequest which Mr. Meyer left to his associates in this office. The scene on the obverse of the medal is taken from the bas-relief of what is believed to be the earliest monument to plant introduction. It is on the wall of the palace of Queen Hatshepsut of Thebes, built about 1570 B. C., and portrays the queen's gardeners leading a boat with seeds and potted plants of the incense tree, to secure which they made an expedition to the land of Punt. On the reverse side is shown a branch of the white-barked pine (*Pinus bungeana*) and one of the Chinese grafted jujube (*Ziziphus jujuba*) with whose introduction into America Mr. Meyer's name should always be associated. The Chinese inscription is from the poem of Chi K'ang, a poet of the Tang Dynasty, 618 A. D., and, freely translated, carries the thought: "In the glorious luxuriance of the hundred plants he takes delight." The first medal was awarded to Mr. Barbour Lathrop, whose personal support of the policy of plant introduction is recorded frequently in the early publications of this office (P26490FS.)

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY

OF

SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1918

(No. 55; Nos. 45972 to 46302.)



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BUREAU OF PLANT INDUSTRY.

Chief of Bureau, WILLIAM A. TAYLOR.
Associate Chief of Bureau, KARL F. KELLERMAN.
Officer in Charge of Publications, J. E. ROCKWELL.
Assistant in Charge of Business Operations, H. E. ALLANSON.

FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, Agricultural Explorer in Charge.

P. H. Dorsett, Plant Introducer, in Charge of Plant Introduction Gardens.
B. T. Galloway, Plant Pathologist, Special Research Projects.
Peter Bisset, Plant Introducer, in Charge of Experimenters' Service.
Wilson Popenoe and J. F. Rock, Agricultural Explorers.
R. A. Young, Plant Introducer, in Charge of Dasheen and Tropical Yam Investigations.
H. C. Skeels, Botanist, in Charge of Collections.
G. P. Van Eseltine, Assistant Botanist, in Charge of Publications.
L. G. Hoover, Assistant Plant Introducer, in Charge of Chayote Investigations.
Cecil C. Thomas, Assistant Plant Introducer, in Charge of Jujube Investigations.
E. L. Crandall, Assistant, in Charge of Photographic Laboratory.
P. G. Russell and Patty Newbold, Scientific Assistants.
David A. Bisset, Superintendent, Bell Plant Introduction Garden, Glenn Dale, Md.
Edward Goucher, Plant Propagator.
J. E. Morrow, Superintendent, Plant Introduction Garden, Chico, Calif.
Henry Klopfer, Plant Propagator.
Edward Simmonds, Superintendent, Plant Introduction Garden, Miami, Fla.
Charles H. Steffani, Plant Propagator.
Henry E. Juenemann, Superintendent, Plant Introduction Garden, Bellingham, Wash.
Wilbur A. Patten, Superintendent, Plant Introduction Garden, Brooksville, Fla.
E. J. Rankin, Assistant in Charge, Plant Introduction Garden, Savannah, Ga.
Collaborators: Thomas W. Brown and Robert H. Forbes, Cairo, Egypt; A. C. Hartless, Scharunpur, India; Barbour Lathrop, Chicago, Ill.; Dr. H. L. Lyon, Honolulu, Hawaii; Henry Nehrling, Gotha, Fla.; Charles T. Simpson, Little River, Fla.; Dr. L. Trabut, Algiers, Algeria; E. H. Wilson, Jamaica Plain, Mass.; E. W. D. Holway, Faribault, Minn.; Dr. William Trelease, Urbana, Ill.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1918 (NO. 55; NOS. 45972 TO 46302).

INTRODUCTORY STATEMENT.

It seems appropriate in this inventory in which are described in his own words the last of Mr. Frank N. Meyer's introductions from China, to give a brief statement regarding his agricultural explorations. These inventories have been the chief medium of publicity through which his discoveries have been made known to the horticultural world. All the plants which he found and imported he described, and the descriptions have appeared in the volumes of this serial publication. These descriptions are not long, but in almost every case they characterize very well the plants and point out the particular value which they are likely to have in America. In this respect they are remarkable and deserve the study of agricultural explorers who may come after him.

Mr. Meyer's first expedition to China covered the period from July, 1905, to July, 1908, and included explorations in Manchuria, Chosen (Korea), and the Chinese Provinces of Chihli, Shansi, Shantung, Honan, Hupeh, and Kiangsi. This period is represented by the introductions which will be found scattered between the numbers 16909 and 24596. His second expedition was from August, 1909, to April, 1912, and numbers between 26131 to 34183 give the descriptions of his collections in England, Belgium, France, Germany, Russia, Crimea, Caucasus, Russian Turkestan, Chinese Turkestan, and Siberia. His third expedition was in Siberia and in the Chinese Provinces of Shantung, Shansi, Shensi, Kansu to the borders of Tibet, Honan, Kiangsu, Anhwei, and Chekiang during the period from November, 1912, to December, 1915, and he describes his introductions under numbers to be found between 35253 and 43022. His fourth trip included Japan and the Chinese Provinces of Shantung, Kiangsu, Honan, Hupeh, Hunan, and Anhwei during the period from October, 1916, until his death in June, 1918, and the

descriptions appear between numbers 45022 and 46718. An outline map has been prepared giving Mr. Meyer's routes of travel during the 13 years of his work as an agricultural explorer (figs. 1 and 2). In addition to the living plant material which Mr. Meyer collected, there are to his credit in the collection of this office 1,740 photographs, which constitute a unique set of illustrations of the agriculture of the Chinese, in particular portraying the crop plants upon which this remarkable people has lived for 40 centuries. Those of them which illus-

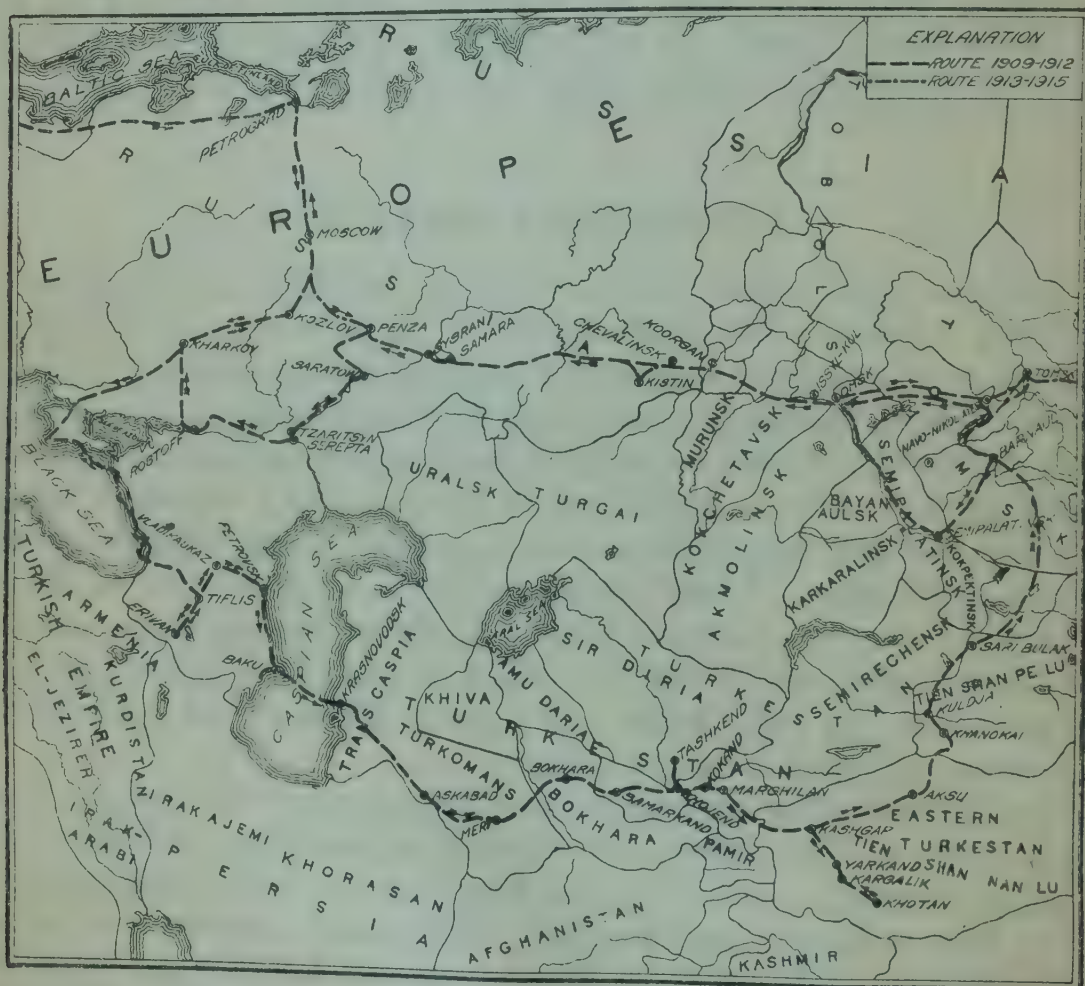


FIG. 1.—Map of Russia and Turkestan, showing the agricultural explorations of Frank N. Meyer. Between 1909 and 1912 Mr. Meyer traveled extensively in these countries hunting for new fruits, forage plants, and other crops for trial in the United States. His second journey to this region, between 1913 and 1915, was less extensive: on this trip only the northern portion of the region above shown was covered.

trate plants destined to become widely used in this country will doubtless come to be published as historic evidences of their first discovery. As accounts of Mr. Meyer's life have been published elsewhere (see *Asia* for January, 1921; *The Journal of Heredity* for June, 1919, and April, 1920; *The National Geographic Magazine* for July, 1919; and *De Aarde en haar Volken*, January to April, and July and August, 1919), and as plants which he introduced will record better than words can his accomplishments, it would hardly

seem appropriate here to more than record the fact that his death occurred on the night of June 2, 1918. He was lost from a river steamer on the Yangtze near the little town of Wuhu. His body was later recovered and buried in the cemetery in Shanghai.

Mr. Meyer left a bequest of \$1,000 to his associates in the Office of Foreign Seed and Plant Introduction, which they have used in the striking of a medal to be known as the Frank N. Meyer Memorial

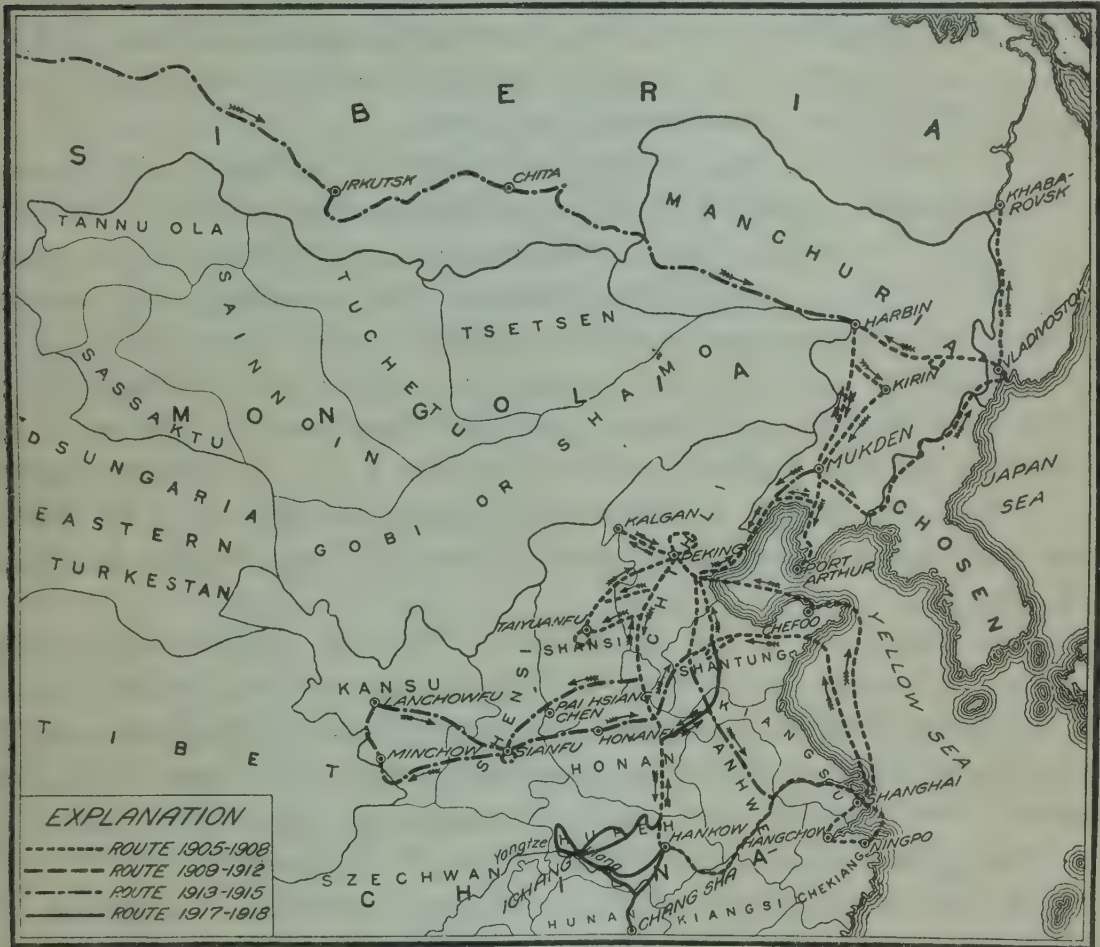


FIG. 2.—Map of eastern Asia, showing the agricultural explorations of Frank N. Meyer. Between the years 1905 and 1919 Mr. Meyer made four trips into eastern Asia in search of new fruits, vegetables, and other economic plants for introduction into the United States. Because of the small size of the map it has been impossible to show each trip entirely and clearly; therefore, after the first trip only such portions of his route are shown as involve territory not traversed previously. This map is shown on a somewhat larger scale than that used for figure 1.

Medal to be awarded under the auspices of the American Genetic Association for distinguished services in the field of foreign-plant introduction (Pl. I). In this way it is hoped to emphasize the importance of this kind of exploration, a work which yields not only ideas but concrete living things that enrich our lives, change our foods, and make more beautiful our surroundings. May it encourage young men with the mental and physical equipment for such work to enter the field and enrich the agriculture of the country by bringing into it the

thousands of new plants which the man of the coming centuries is going to need and use.

A number of valuable plant introductions are described in this inventory. In his remarkable work, "Farmers of Forty Centuries," King calls attention to the fact that the Chinese pay 28 cents a pound for the young shoots of a certain species of clover, or six times as much as they do for any other vegetable. It is not only eaten fresh but dried and used in soups. In view of the value placed upon the fat soluble vitamine which occurs in green leafy vegetables it has seemed worth while to introduce this species (*Astragalus sinicus*, No. 45995) for experimental purposes.

Mr. Barbour Lathrop, during his last trip to Japan, discovered that among the Japanese of all social classes the mitsuba (*Deringa canadensis*, No. 46137) was a common and universally appreciated vegetable. It is a strange circumstance that, although this species is found wild in the woods of the Atlantic coast and as far west as the Mississippi and has for a century or more been cultivated extensively in Japan, no attempt has ever been made to utilize it in America until Mr. Lathrop called attention to it. It is more easily grown than celery, has a characteristic flavor of its own, and would doubtless fit easily into the menu of those who once become familiar with its taste.

In the hammock lands of southern Florida, where every year hundreds of acres are devoted to the raising of early potatoes for the northern market, February frosts or flooding from unusually heavy rains make potatoes a precarious crop. On these lands the tropical yautia grows and produces amazingly, not being affected by flooding and recovering quickly from frost injuries. The tubers when properly prepared form a delicate vegetable, comparing in this respect with the best potatoes. The introduction of a new variety (No. 46030) whose tubers have yellow flesh instead of white and a more mealy character, which make it preferred to all others in Porto Rico, is worthy of special mention. It is known in Guadeloupe as the malanga coloré.

The Australian casaba (No. 46029), which produces fruits the size of a cucumber that are esteemed very highly in Australia for pies and are eaten there fresh with sugar, might be worth testing in our own casaba-melon areas.

The Puget Sound region seems to be one in America where Himalayan plants are most at home, and Dr. Cave's collection of seeds from Darjiling has in it several unusually interesting species. The giant lily (*Lilium giganteum*, No. 46085), which grows to 12 feet in height and bears fragrant yellow-throated blooms; the Nepal lily (*L. nepalense*, No. 46086) with deep maroon-purple, almost

black-throated flowers which, if it were hardier in England, would be, it is reported, the most popular of all the oriental lilies; the large mountain-cherry tree (*Prunus cerasoides*, No. 46093), which makes a brilliant show with its rose-red flowers and may have value because of its acid fruits; the remarkable *P. napaulensis* (No. 46094), a small tree which bears racemes of flowers 10 inches long that produce cherries an inch in diameter and which should appeal strongly to the cherry breeder; an edible *Pyrularia* with fruit 2 inches long (*Pyrularia edulis*, No. 46095); the Javanese sumach (*Rhus javanica*, No. 46096), which colors up beautifully in our autumn and is much hardier than its name would indicate; and a large-fruited *Solanum* (*Solanum khasianum*, No. 46103); these form part of this remarkable collection by Dr. Cave.

Through Dr. Safford's investigations the sacred earflower of the ancient Mexicans (*Cymbopetalum penduliflorum*, No. 46206) has been, so to speak, rediscovered, and it can not fail to be of interest to grow in Florida this remarkable plant, the fragrant flowers of which were dried and used by the ancient Mexicans in flavoring their cocoa and other foods before the advent of cinnamon and the other East Indian spices.

Mr. P. J. S. Cramer has sent in from Buitenzorg a collection of seeds of leguminous plants (Nos. 46243 to 46248) which are grown for forage purposes in Java and can scarcely fail to be of value in southern Florida.

What the behavior in America will be of the Transvaal yellow peach (No. 46239), which Mr. Pole Evans says is peculiarly free from the diseases of that region, remains to be seen, but peach growers can hardly fail to be interested in it.

The possibility that some day the delicious lychee may be commercially grown in Florida is still alluring, though its behavior has not been entirely satisfactory there. Possibly its near relative, *Alectryon subcinereum* (No. 46299), which its sender, Dr. Proschowsky, has fruited at Nice, may be a suitable stock upon which to grow it.

The great interest in the avocado and the occurrence of natural hybrids between the Guatemalan, Mexican, and West Indian forms, which are growing side by side in our Miami garden, have made it seem worth while to gather together all the species of the genus *Persea* for study. *Persea azorica* (No. 45997) from Ponta Delgada is one of these.

That the fruiting and early spring-flowering shrubby cherry (*Prunus glandulosa*, No. 46003) from Ichang may prove its usefulness and finally find a place in the dooryards of the Atlantic coast region, where its flowers and its purple-black cherries will be appreciated, was one of Mr. Meyer's last wishes.

The Feijoa from Paraguay has been a successful introduction and has established itself in thousands of our gardens. Possibly the "Nyandú-aphisá" (*Britoa sellowiana*, No. 46024), a fruiting shrub from the same region, may be equally successful.

The common habit of budding all species of East Indian mangos upon seedlings of the common turpentine mango may prove to be inadvisable. It is possible even that the relatives of the mango, such as *Mangifera longipes* (No. 46022) from Malakka, may have value for stock purposes.

If *Sabinea carinalis* (No. 46026) has not been already tested in California it should be, according to Mr. Jones, of the island of Dominica, for it has showy scarlet flowers and is particularly suited to the dry, hot hillsides which abound in California. How much frost it will stand is yet in question.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 17, 1921.

INVENTORY.¹

45972. EDGEWORTHIA CHRYSANTHA Lindl. Thymelæaceæ.
(*E. papyrifera* Zucc.)

From China. Plants presented by Mrs. L. J. Doolittle, Washington, D. C.
Received April 4, 1918.

"*Mitsumata*. From Kiangsi Province, South China. A rare tree with very fragrant yellow flowers appearing in April." (*Mrs. Doolittle*.)

45973 and 45974.

From Batum, Russia. Presented by the superintendent of the Botanic Gardens. Received April 9, 1918.

45973. BERBERIS JAPONICA BEALEI (Fortune) Skeels. Berberidaceæ.

Barberry.

A stiff evergreen shrub native to China, often 10 feet in height, with thick, unbranched stems. The pinnate leaves, 1 to 2 feet long, are made up of 7 to 13 obliquely ovate, dark dull-green leaflets 8 inches long and 6 inches wide, having four to six large spiny teeth along each margin. The delightfully fragrant lemon-yellow flowers are borne in a cluster of several slender erect racemes 6 to 9 inches long and are followed by oblong purple berries half an inch long. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 244.)

45974. VIBURNUM DILATATUM Thunb. Caprifoliaceæ.

"This is one of the best hardy shrubs for the garden. It grows to only 4 or 5 feet in height and is certain to turn out a full display of bloom every year. The flowers are white, produced in dense corymbs, and are followed by an abundance of bright coral-red berries. The foliage is fine and so far has not been troubled with any insects or fungous enemies." (*The American Florist*, vol. 15, p. 123.)

For an illustration of this shrub in fruit, see Plate II.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in this inventory are those under which the material was received when introduced by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in this inventory will undoubtedly be changed in many cases by the specialists interested in the various groups of plants, to bring the forms of the names into harmony with recognized American codes of nomenclature.

45975. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief. Plant Breeding Station. Received April 10, 1918.

"The oil palms I introduced here commenced to fruit when I had not yet my own garden in Sumatra at my disposition. I have planted in several Government rubber estates, where no other oil palms are in the neighborhood, plats of 5 to 10 palms, each plat descending from one seed bearer. I send you with this mail some seeds of *Bundi D*, tree No. 13. You will notice that this variety has a very thin shell, so that you may crack it with the teeth." (*Cramer.*)

45976 to 45979.

From India. Seeds presented by Mr. George F. Mitchell, Washington, D. C., who obtained them from Dr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling, India. Received April 10, 1918. Quoted notes by Mr. Mitchell.

45976. CORYLUS FEROX Wall. Betulaceæ. Filbert.

"This nut comes from Sikkim and is like a hazelnut. Dr. Cave thinks it will take about 10 years to bear. The natives of Sikkim praise it very highly."

For previous introduction, see S. P. I. No. 41812.

45977. DECAISNEA INSIGNIS (Griffith) Hook. f. and Thoms. Lardizabalaceæ.

"A bush from northern Sikkim that bears wonderful fruit about as big as one's thumb and about 4 inches long. Dr. Cave sent a man to Sikkim specially to procure the seed of this fruit."

This is one of the most remarkable of Indian botanical discoveries, both in structure and appearance, and is further notable as yielding an edible sweet-fleshed fruit. It is a native of the humid forests of Sikkim and Bhutan at altitudes of 7,000 to 9,000 feet above the sea. The trunk or trunks, for sometimes several spring from the ground from a common root, are 6 to 10 feet high, as thick as one's arm, and very brittle; the pale bark is covered with lenticels; the pith is very large; the branches are few, subterminal, and erect; the compound leaves are terminal and axillary; the many-flowered horizontal racemes are a foot long, and the drooping, green flowers are 1 inch long, on slender pedicels as long as themselves. (Adapted from *Curtis's Botanical Magazine*, pl. 6731.)

45978. HOLBOELLIA LATIFOLIA Wall. Lardizabalaceæ.

"Grows in Darjiling, and is a vine bearing a nice fruit, purple in color, the size of a man's thumb, with subacid pulp. The flower is also very showy. The native name of this fruit is *gophila*."

45979. MAGNOLIA CAMPBELLII Hook. f. and Thoms. Magnoliaceæ.

Magnolia.
"Indigenous to the eastern Himalayas, but grows at 8,000 feet altitude. Requires a moist, cool climate."

A deciduous tree, occasionally 150 feet in height, found in the Himalayas in India at altitudes of 8,000 to 10,000 feet. The oval leaves, 6 to 10 inches long, are smooth above and covered beneath with appressed hairs. The fragrant cup-shaped flowers, 6 to 10 inches across and varying in color from rose to deep crimson, are produced in the spring before the leaves. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 67.)



A HANDSOME RED-BERRIED SHRUB FROM EASTERN ASIA. (*VIBURNUM DILATATUM* THUNB., S. P. I. No. 45974.)

A fine *Viburnum* requiring less moisture than most other species and therefore suited for dooryard use. It blooms profusely in June, trusses being produced from short twigs down the side as well as at the top of the branch. The flowers are pure white. The bright-red berries that follow the flowers almost literally cover the bush. Hardy throughout the Eastern States. (Photographed by Peter Bisset, Allegheny, Pa., September 11, 1916; P20597FS.)



A FIELD OF GENGE CLOVER IN EASTERN CHINA. (ASTRAGALUS SINICUS L., S. P. I. No. 45995.)

This clover is extensively grown in China as a manure crop on the low rice fields. The whole crop is plowed under in early summer, immediately before the planting of the rice. It is also used as human food. (Photographed by F. N. Meyer, Mokaushan, Chekiang, China, April 4, 1908; P5437FS.)

45980 and 45981.

From Adelaide, South Australia. Presented by Mr. J. F. Bailey, director, Botanic Garden. Received April 1, 1918.

"These seeds were obtained from the Macdonnell Range through Dr. E. Angus Johnson, of this city." (*Bailey.*)

45980. LIVISTONA MARIAE F. Muell. Phœnicaceæ. Palm.

An erect palm with fan-shaped leaves divided into narrow plicate segments. This palm was found in the Glen of Palms in the Macdonnell Range, and seems to be very little known. (Adapted from *Bentham, Flora Australiensis*, vol. 7, p. 146.)

45981. MACROZAMIA MACDONNELLII F. Muell. Cycadaceæ.

An erect palmlike plant with pinnate leaves 2 to 4 feet long having linear segments inserted at a very oblique angle, sometimes almost transverse.

This species is referred to *M. fraseri* Miq. in *Bentham, Flora Australiensis*, vol. 6, p. 253, but at the Adelaide Botanic Garden is considered to be distinct.

45982 to 45987.

From Cartagena, Colombia. Procured by A. J. Lespinasse, American consul. Received April 12, 1918. Quoted notes by Mr. Lespinasse.

45982. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"*Huandul.* Grown in the Departments of Bolivar and Atlantico."

"The pigeon-pea, or guandul, supposed to be a native of India, is cultivated widely for food in the Tropics and Subtropics. It is perennial in frostless regions, but is usually cultivated as an annual. About ten months are required to mature the seed. Frost kills the plants. There are many varieties of pigeon-peas, some suitable for food and some not. Being a legume, the crop is valuable for soil improvement as well as for the seed. The plant develops into a large, semiwoody bush reaching the height of from 5 to 10 feet. When grown for seed, plant two or three seeds in each hill, in 4-foot rows, and 3 feet apart in the row, thinning later to one plant in a hill. Pigeon-peas are resistant to excessive rains in the Tropics, and the seed does not rot when planted, as is the tendency with some other leguminous crops. Although the skin of the pigeon-pea is a little tough, the flavor is good. The peas are cooked like ordinary shelled beans, that is, soaked over night and then parboiled 10 to 15 minutes with a little soda in the water; boiling for one hour or a little more after this usually cooks them completely." (*R. A. Young.*)

For previous introduction, see S. P. I. No. 43646.

45983 and 45984. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

45983. "*Zaragoza* (white). Grown in the Departments of Bolivar and Atlantico."

45984. "*Zaragoza* (red). Grown in the Departments of Bolivar and Atlantico."

45985. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

"White and red beans (large). Grown in the Departments of Tolima and Huila."

45982 to 45987—Continued.**45986.** PISUM SATIVUM L. Fabaceæ.**Garden pea.**

"Arbejas. Grown in the Departments of Tolima and Huila."

45987. VIGNA SINENSIS (Torner) Savi. Fabaceæ.**Cowpea.**

"Frijol Pequeno (cabeza negra). Grown in the Departments of Bolivar and Atlantico."

45988. JUGLANS sp. Juglandaceæ.**Walnut.**

From Ecuador. Obtained by Dr. Frederic W. Goding, American consul general at Guayaquil. Received April 12, 1918.

"Nuts from a native walnut of Ecuador. This tree is fairly common in the valleys among the Andes, usually where the cinchona trees are to be found." (Goding.)

45989. AMYGDALUS PERSICA L. Amygdalaceæ.**Peach.**

(Prunus persica Stokes.)

From Spain. Procured by the American consul at Bilbao. Received April 13, 1918.

Peach seeds introduced for breeding experiments being carried on in this Department.

45990. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Trinidad, British West Indies. Tubers presented by Mr. J. B. Rorer, Board of Agriculture, Port of Spain. Received April 20, 1918.

"A large white yam of good quality. When boiled and mashed it can scarcely be distinguished from good white potatoes similarly prepared. Individual tubers are said often to exceed 20 pounds in weight, where the season is long enough." (R. A. Young.)

45991 to 45994. DIOSCOREA spp. Dioscoreaceæ.**Yam.**

From Mayaguez, Porto Rico. Tubers presented by Mr. C. F. Kinman, horticulturist, Porto Rico Agricultural Experiment Station. Received April 25, 1918. Identified by Mr. O. W. Barrett, of this Bureau. Descriptions prepared by Mr. R. A. Young, of this Office.

45991. DIOSCOREA ESCULENTA (Lour.) Burkill.**Yam.**

"A rather small, smooth-skinned yam, called in Porto Rico 'potato yam.' Said by Mr. C. F. Kinman to have come from Africa. The tubers, when well grown, average about 12 ounces in weight. The skin somewhat resembles that of the white potato. The flesh is usually white, slightly mealy when cooked and mashed, and is sweet. These qualities appear to be variable, and while the yam is sometimes very good it is occasionally very poor. Of possible value for central and southern Florida."

45992. DIOSCOREA TRIFIDA L. f.**Yampi.**

"A root-covered, white, sweetish yampi. Usually of very good quality, though somewhat fibrous. The tubers are said to average about three-quarters of a pound each when well grown. This yampi may prove of value on the peninsula of Florida."

45993. DIOSCOREA ROTUNDATA Poir. L.**Yam.**

"Guinea. A popular, white-fleshed yam said to commonly reach a weight of 6 pounds or more in Porto Rico and to be of good quality. It thrives there in heavy clay soil and with a rather small amount of rain."

45991 to 45994—Continued.

45994. DIOSCOREA BULBIFERA L.

Yam.

"The aerial tubers of this yam are somewhat better for food than the ground tubers, according to Mr. C. F. Kinman. The flesh is yellow and rather strong flavored, often practically inedible. The aerial tubers are very tough skinned and keep for a long time."

45995. ASTRAGALUS SINICUS L. Fabaceæ.

Genge clover.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co.
Received April 15, 1918.

Late Giant variety. A field crop very extensively grown for human food and partly as a source of soil nitrogen; it is closely allied to our alfalfa. Tender tips of the stems are gathered before the stage of blossoming is reached and served as food after boiling or steaming. It is known among foreigners as 'Chinese clover.' The stems are also cooked and then dried for use when the crop is out of season. Wealthy Chinese families pay an extra high price for the tender shoots when picked very young, sometimes as much as 20 to 28 cents per pound in our currency. (Adapted from *King, Farmers of Forty Centuries*, p. 128.)

For illustrations of a field of this clover and of a single plant, see Plates III and IV.

45996. ZEA MAYS L. Poaceæ.

Corn.

From Torreon, Coahuila, Mexico. Presented by Mr. Carlos Gonzales. Received April 16, 1918.

"*Maiz de tiempo*, or *maiz pepitilla*."

Introduced for the breeding experiments of the Bureau of Plant Industry.

45997. PERSEA AZORICA Seubert. Lauraceæ.

From Ponta Delgada, Azores. Presented by the American consul. Received April 16, 1918.

A medium-sized tree found in the forests of all the islands of the Azores, especially in the island of Pico, at altitudes of 1,000 to 2,500 feet. The leaves are oval, with wedge-shaped bases and hairy margins. The fruits are quite small and egg shaped. (Adapted from *Seubert, Flora Azorica*, p. 29.)

For previous introduction, see S. P. I. No. 43480.

45998. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

Coral tree.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received April 19, 1918.

A low tree found in northern India, from Kumaon to Sikkim and in the Khasi Hills, up to an altitude of 7,000 feet. The light-green pinnate leaves are made up of three leaflets 5 to 7 inches long and nearly as broad. The racemes of vivid scarlet flowers, sometimes 15 inches long, appear during the hot season while the tree is still leafless. The lanceolate, curved, brownish pubescent pods contain 2 to 10 large dull-black seeds. The wood is white, soft, and light and is used for making boxes and toys. (Adapted from *Brandis, Indian Trees*, p. 227.)

45999 to 46001.

From Richmond, Jamaica. Presented by Rev. H. B. Wolcott. Received April 20, 1918. Quoted notes by Mr. Wolcott.

45999 and 46000. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

45999. "Large, oval; good quality."

46000. "Small, round; good quality."

46001. *HIBISCUS SABDARIFFA* L. Malvaceæ.

Roselle.

"The red sorrel with us fruits in November and December and at no other time, no matter when sown. Seeds sown in April and transplanted in June make good-sized shrubs in good soil."

46002 and 46003.

From Ichang, Hupeh, China. Roots and cuttings collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received April 25, 1918. Quoted notes by Mr. Meyer.

46002. *ROSA* sp. Rosaceæ.

Rose.

"(No. 1302. March 4, 1918.) A shrubby rose with small foliage, sending up many stems of bright-green color, which are very spiny. Said to bear single, medium-sized flowers of flesh color. Grows to a height of about 6 feet; thrives well in stiff clay soil, and resists great humidity and high temperatures. Of value possibly in breeding experiments and as a stock for roses in warm climates. Obtained from the garden of the Roman Catholic Convent at Ichang."

46003. *PRUNUS GLANDULOSA* Thunb. Amygdalaceæ.

Cherry.

"(No. 1303. March 4, 1918.) *Gai yuen tao*. A spreading shrub, with many slender twigs, growing to a height of 3 to 5 feet; flowering early in spring, with a multitude of small, rosy white flowers which are followed by an abundance of small fruits of purple-black color and of fresh sour taste. These tiny cherries lend themselves well to be made into excellent preserves and are so utilized by the Roman Catholic missionaries in the southwest part of Hupeh, where this bush cherry is found very frequently in gardens. Since this species of *Prunus* thrives in regions with high summer temperatures and great humidity it probably will succeed in the South Atlantic and Gulf States. By selection and hybridization larger fruited forms should be developed and a new fruiting shrub for the home garden would be the result. Obtained from the garden of the Roman Catholic Convent at Ichang."

46004. *JUGLANS REGIA* L. Juglandaceæ.

Walnut.

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanical Gardens. Received April 25, 1918.

Kashmir walnuts introduced for breeding experiments being carried on by the Bureau of Plant Industry.

46005. *APHLOIA THEAEFORMIS* (Vahl) Bennett. Flacourtiaceæ.

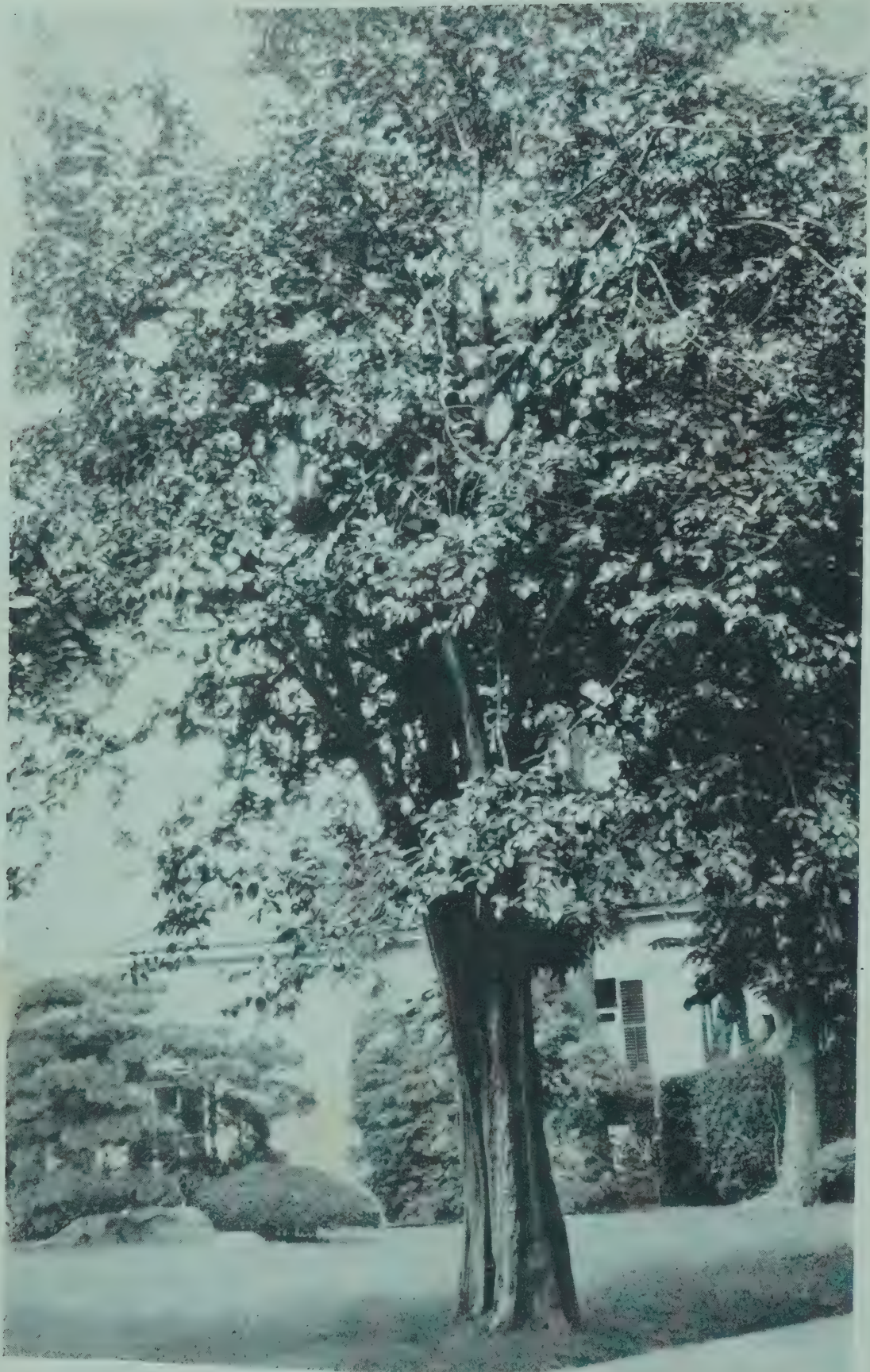
From Madagascar. Presented by Mr. Eugene Jaeglé, director, Agricultural Experiment Station at Ivoloïna, Tamatave. Received April 25, 1918.

An erect, much-branched shrub native to Madagascar, Mauritius, and the Seychelles Islands. The alternate leaves are deeply pinnatifid on the young shoots, with one to three pairs of obtuse ascending lobes; on the mature



THE GENGE CLOVER GROWN AS A VEGETABLE IN CHINA. (*ASTRAGALUS SINICUS* L., S. P. I. No. 45995.)

King, in his *Farmers of Forty Centuries*, draws attention to the fact that the Chinese grow this clover not only as a source of soil nitrogen but for human food. For this purpose they cultivate it in specially prepared beds and gather the shoots before the stage of blossoming is reached and prepare them by boiling or steaming them. The stems are also cooked and dried for winter use. When picked very young these clover shoots bring the highest price of any vegetable, as much as 28 cents gold per pound. The reason for this fact is worthy of investigation by physiologists. (Photographed by Frank N. Meyer, Mokanshan, Chekiang, China, April 22, 1908; P5133FS.)



THE CHINESE QUINCE TREE. (*CHAENOMELES SINENSIS* (THOUIN)
KOEHNE, S. P. I. No. 46130.)

A handsome ornamental park tree introduced into Europe from China as early as the eighteenth century, now much grown on the Riviera. The tree shown is in the grounds of the American Embassy in Tokyo. It is a long-lived species of quince bearing fruits sometimes as much as 7 inches in length with a very waxy highly scented skin. Frank N. Meyer, who secured the seeds of S. P. I. No. 46130 in Ichang, China, reported that the fruits are only used by the Chinese there as room perfumers and suggests the tree be tried as a stock for pears in the Southern States. Possibly it may be useful for breeding purposes also. (Photographed by F. N. Meyer, Tokyo, Japan, September 14, 1915; P12355FS.)

branches they are oblong, entire or crenate, 1 to 4 inches long. The yellowish flowers, half an inch broad, are borne singly or in small fascicles in the axils of the leaves. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 12.)

46006. LIVISTONA HOOGENDORPII Andre. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 12, 1918.

Livistona hoogendorpii is quite distinct from its allies, *L. chinensis* and *L. rotundifolia*. It is more dwarf in stature, with leafstalks covered with stout brown spines and the leaf blade divided almost from its base. (Adapted from *The Garden*, vol. 25, p. 392.)

46007 to 46018.

From Colombia. Purchased by Mr. Claude E. Guyant, American consul at Barranquilla. Received April 12, 1918.

A collection of various kinds of legumes introduced for experimental purposes. Quoted notes by Mr. Guyant.

46007. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"*Guandul*."

For previous introduction, see S. P. I. No. 45982.

46008. CICER ARIETINUM L. Fabaceæ. Chick-pea.

"*Garbanzo* (de Honda), Chick-pea from Honda."

46009. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.

(*Lens esculenta* Moench.)

"*Lentejas*. Lentils."

46010 to 46012. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

46010. "*Zaragoza* (blanca). White."

46011. "*Zaragoza* (caraotas)."

46012. "*Habas* (blancas). Horse beans, white." [Note.—These were Lima beans, not horse beans, *Vicia faba*.]

46013 to 46016. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46013. "*Zaragoza* (blanca). White."

46014. "*Frisol* (bolon). Kidney bean, round."

46015. "*Frisol* (rojo). Kidney bean, red."

46016. "*Frisol* (de Santander). Kidney bean from Santander."

46017. VICIA FABA L. Fabaceæ. Broad bean.

"*Habas* (negras). Horse bean, black."

46018. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

"*Frisol* (ojos negros). Kidney bean, black eye."

46019 to 46023.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.
Received April 16, 1918.

46019. DEGUELIA TRIFOLIATA (LOUR.) Taub. Fabaceæ.

(*Derris uliginosa* Benth.)

A robust climbing shrub with glabrous branchlets and leaves, found from India to China and throughout the Malayan Archipelago to Aus-

46019 to 46023—Continued.

tralia. The compound leaves are made up of three to five somewhat coriaceous, ovate leaflets 2 to 4 inches long, and the rose-red flowers are produced in branched racemes 4 inches long. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 242.)

46020 and 46021. *LANSIUM DOMESTICUM* Jack. Meliaceæ. Langsat.

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh. The flavor is highly aromatic, at times slightly pungent. Each of the five segments of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten fresh, but is also said to be utilized in various other ways." (*Wilson Popenoe*.)

46022. *MANGIFERA LONGIPES* Griffith. Anacardiaceæ.

A large evergreen tree from the Malay Peninsula, related to the mango. The lanceolate, coriaceous leaves are 6 to 10 inches long and 1 to 3 inches wide. The panicles of white flowers with yellow veins are branched and longer than the leaves. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 15.)

46023. *PANGIUM EDULE* Reinw. Flacourtiaceæ. Pangi.

A quick-growing, spreading tree with very large heart-shaped leaves, found on the Malay Peninsula. The large rusty-brown woody fruits are the size of small coconuts and contain numerous large seeds. The seeds are said to be poisonous until boiled and macerated in water, when they become edible. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 578.)

46024 and 46025.

From Puerto Bertoni, Paraguay. Presented by Dr. M. S. Bertoni. Received April 17, 1918. Quoted notes by Dr. Bertoni.

46024. *BRITOA SELLOWIANA* Berg. Myrtaceæ.

"*Nyandú-aphisá*. A shrub growing to a height of 2 to 4 meters. The edible fruits are sweet, but slightly acid. The plant has withstood a temperature of -4° C."

46025. *GUABEA GRANDIFOLIA* DC. Meliaceæ.

"A small or medium-sized tree of rapid growth. It is a good shade plant for coffee and is ornamental because of its dense crown of large leaves."

46026. *SABINEA CARINALIS* Griseb. Fabaceæ.

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator of the Botanic Gardens. Received April 19, 1918.

"This small tree is known locally as *Bois Charibe* and is one of the most showy of our native plants. It is a very fine flowering tree, and I have seen nothing in the Tropics to surpass it as a mass of color. If grown on fairly

good land it will not make a good show, but if planted on a dry, rocky hillside, where it will be scorched by the sun for a period of three or four months each year, it makes a marvelous display of flowers. It would probably succeed in the hot parts of California." (Jones.)

A shrub or small tree with abruptly pinnate leaves having six to eight pairs of oblong leaflets. The large bright-scarlet flowers are borne in fascicles of three to five and appear before the leaves. (Adapted from *Grisebach, Flora of the British West-Indian Islands*, p. 183.)

46027. CHENOPODIUM BONUS-HENRICUS L. Chenopodiaceæ.

Good King Henry.

From Ireland. Presented by the director of the Dublin Royal Botanic Garden. Received April 22, 1918.

An herbaceous perennial, 2 to 3 feet tall, often cultivated for the large triangular leaves, which are used like spinach.

46028. SOLANUM ACULEATISSIMUM Jacq. Solanaceæ.

From San Jose, Costa Rica. Fruits presented by Mr. A. Tonduz, Ministerio de Hacienda y Comercio. Received April 30, 1918.

A spiny undershrub 1 to 2 feet high, widely distributed in the Tropics. The few-flowered axillary cymes of snow-white flowers 1 inch across are followed by globose orange or yellow fruits often 2 inches in diameter. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 6, p. 3184.)

46029. CUCUMIS MELO L. Cucurbitaceæ.

Australian casaba.

From Burringbar, Australia. Presented by Mr. B. Harrison. Received April 30, 1918.

"I am inclosing seeds of the Australian casaba, the correct name of which I do not know, but which I believe originally came from India. It is a most prolific plant, bearing cream-colored fruit about the size of a cucumber. It is sometimes called the 'apple melon' and is quite popular here, being very palatable when eaten with sugar or made up into pies. It is hardy, prolific, and early, and should thrive well throughout the United States." (Harrison.)

46030. XANTHOSOMA sp. Araceæ.

Yautia.

From San Juan, Porto Rico. Tubers presented by Mr. W. J. McGee, chief, Bureau of Chemistry, Experiment Station. Received May 2, 1918.

"A small-growing yautia which produces edible, yellow-fleshed corms; they are mealy and dry and rich in flavor when cooked. The cormels or lateral tubers, are usually too small for table use. The very young leaves are often used for greens, called *calalou* in the French West Indies. The leaves are acrid and require parboiling with a little baking soda or cooking with fat meat. The plant seldom exceeds 3 feet in height. The leaf blade is narrowly sagittate, with a broad sinus; basal veins naked for one-fourth of an inch; marginal vein one-eighth of an inch or less from edge of blade. Petiole green; sinus wings glaucous, tinged with purple, with an irregular greenish white stripe next to the margin; margin of wing pink. The prominent whitish stripe on the wing of the petiolar sinus is an easy distinguishing character. In Guadeloupe this yellow variety is called *malanga coloré*, or colored eddo, and is said to be more highly esteemed than the white-fleshed yautias. It is eaten baked, boiled, fried, etc." (R. A. Young.)

46031 to 46046.

From Caracas, Venezuela. Presented by Dr. H. Pittier. Received April 23, 1918.

46031 to 46037. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"These varieties have not as yet been generally distinguished by the people at large here, so they have no distinctive names." (Pittier.)

46031. No. 1. Seed three-fourths of an inch long by half an inch broad; light gray with irregular dark-brown longitudinal markings.

46032. No. 2. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with brown markings.

46033. No. 3. Seed half an inch long by one-fourth of an inch broad; dark gray with dark-brown, rather regular markings.

46034. No. 4. Seed three-eighths of an inch long by one-fourth of an inch broad; light gray with few, narrow, irregular, brownish markings.

46035. No. 5. Seed half an inch long by three-eighths of an inch broad; dark gray with numerous irregular dark-brown markings.

46036. No. 6. Seed five-eighths of an inch long by three-eighths of an inch broad; reddish gray with narrow streaks of reddish brown.

46037. No. 7. Seed three-eighths of an inch long by one-fourth of an inch broad; dark gray with nearly black markings.

46038 to 46046. *TRITICUM AESTIVUM* L. Poaceæ.
(*T. vulgare* Vill.)

Wheat.

"A collection of the native varieties of wheat with their common names. They come from the State of Trujillo in the Venezuelan Andes, where they are extensively cultivated from 1,000 meters upwards." (Pittier.)

46038. "*Blanco.* Cultivo del Distrito Bocono."

46039. "*Cariaco.* Cultivo del Distrito Bocono."

46040. "*Cariaco.* Distrito Urdaneta."

46041. "*Macarrón.* Cultivo del Distrito Bocono."

46042. "*Nortero.* Cultivo del Distrito Bocono."

46043. "*Pelón.* Distrito Urdaneta."

46044. "*Raspudo* or *Caña morada.* Distrito Urdaneta."

46045. "*Salmerón.* Cultivo del Distrito Bocono."

46046. "*Salmerón.* Cultivado en la 'Cristalina,' Distrito Trujillo."

46047 and 46048.

From San Lorenzo, Tolima, Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical. Received May 1, 1918.

46047. *ATTALEA* sp. Phœnicaceæ.

Coquito palm.

Introduced for tests of oil-producing seeds of various kinds.

46048. *ELAEIS MELANOCOCCA* Gaertn. Phœnicaceæ.

Noli palm.

"A palm with practically no stem, the leaves, 8 to 10 feet long, being borne within 2 to 3 feet of the ground. The fruits, which are compressed, irregular, and orange-red in color when ripe, are borne in dense clusters. Two classes of oil are obtained—red oil from the coating of the seeds and a clear oil from the kernels. The latter is very much prized as a cooking oil. The palm is common in the low lands among flooded areas under conditions similar to those of our flooded bottom lands along the Mississippi and other Gulf coast rivers." (H. M. Curran.)

For previous introduction, see S. P. I. No. 43001.

46049. ACACIA MELLIFERA (Vahl) Benth. Mimosaceæ.

From Cairo, Egypt. Presented by Mr. T. W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 4, 1918.

A shrub or small tree, native to the Niger and Upper Nile valleys and said to yield a gum like gum arabic. The smooth leaves, as broad as long, not exceeding 1 to 2 inches, are made up of two pairs of pinnae, each having a pair of obliquely obovate-oblong entire leaflets. The fascicled spikes of yellow flowers are longer than the leaves and produce pale sinuous pods 1 to 2 inches long. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 340.)

46050. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

From New York, N. Y. Purchased from S. Rosen. Received May 11 and 17, 1918.

For previous introduction, see S. P. I. No. 45982.

46051 to 46055. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From China. Presented by Mr. F. J. White, Shanghai Baptist College. Received April 27, 1918. Quoted notes by Mr. White.

"The seeds that I had myself were all lost while I was in America, so that I am unable to vouch for the authenticity of these seeds, but they are probably all right. I think you will find some of them very good if any are like the ones that I had. The large, round, flat squash is very prolific, very hardy, and very good in quality."

46051. "Squash; long, round."

46052. "Squash; round, bell shaped."

46053. "Squash; round, flat, No. 1."

46054. "Squash; round, flat, No. 2."

46055. "Squash; round, flat, No. 3."

46056. ZEA MAYS L. Poaceæ. Corn.

From Guadalajara, Jalisco, Mexico. Presented by the estate of Diego Moreno. Received May 4, 1918.

"*Maiz pepitilla*. For sowing it is necessary to have grain which produces many shoots, and for this reason it is sown here in two ways—one at a distance of 1 meter (39.37 inches) apart, three grains in a hill; the other, one grain for every 25 cm. (9.84 inches), the latter being the better method. In both cases the furrows are a distance of 84 cm. (33 inches) apart. On coming up, the plant is very slender, but after reaching a height of 25 cm., it becomes very graceful and robust. In hot lands or along the coast it yields in three months, in moderate temperature in six months, and in cooler lands from seven to eight months. It is very well adapted to lands where the rainfall is not abundant, for it is more drought-resistant than any other variety. The stalk grows more than that of other corn and generally each stalk bears two ears if the land is ordinary and three and more ears when the land is very good. Another of the advantages which it has is that the ear rots less than that of any other variety, because the leaves inclose it perfectly at the end and do not permit water to enter when it is mature. The cob of the ear is very slender and the corn very high, for which reasons it yields much. When the yield is good it generally weighs 70 kilograms to the hectoliter (about 55 pounds to the bushel) and even 72 kilograms (56.5 pounds) when the yield is very good. This corn is appreciated because it contains much starch; when made into meal for use in the preparation of tortillas

it swells and gives better results than any other kind, thus it has a greater value than other varieties. As it contains less oil than other varieties, it is not good for fattening hogs, but is suitable for other animals." (*Moreno.*)

46057. LUPINUS CRUCKSHANKSII Hook. Fabaceæ. Lupine.

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

A somewhat woody perennial, up to 5 feet high, native to the Andes of Chile. The seven to nine leaflets are lanceolate, obtuse, and glaucous underneath. The large fragrant flowers are white with a yellow standard, turning violet with age. (Adapted from *Curtis's Botanical Magazine*, pl. 3056.)

46058. ROSA CHINENSIS Jacq. Rosaceæ. Rose.

From Hertford, England. Plants purchased from Paul & Sons, Cheshunt Nurseries. Received May 16, 1918.

"*Ard's Rover*. A semiclimbing rose of the *Rosa chinensis* type. Flowers very large, dark red, abundantly produced. Useful for breeding red varieties." (*Dr. Walter Van Fleet.*)

46059 and 46060.

From London, England. Purchased from Messrs. Watkins & Simpson, Ltd., Covent Garden. Received May 4, 1918.

Obtained for the experiments of the Office of Forage-Crop Investigations.

46059. LUPINUS DOUGLASII Agardh. Fabaceæ. Lupine.

An herbaceous perennial from a slightly woody base, found along the coast of California from San Francisco to Los Angeles. The pubescent leaves have seven to nine oblanceolate leaflets 1 to 2 inches long. The large blue or purple flowers are scattered or subverticillate on long-peduncled terminal racemes. (Adapted from *Brewer and Watson, Botany of California*, vol. 1, p. 117.)

46060. LUPINUS POLYPHYLLUS Lindl. Fabaceæ. Lupine.

Variety *moerheimii*. This handsome and useful lupine differs from the true *polyphyllus* forms in its manner of growth, this being very much more compact and erect. One other point of difference worthy of note is that the lower flowers, which are the first to open, are very long lived and remain fresh until practically all the blooms have expanded. In *Lupinus polyphyllus* the lower flowers begin to fade some time before the topmost flowers have opened. *L. moerheimii* is very free flowering and of a beautiful bright-pink hue. (Adapted from *The Gardeners' Magazine*, vol. 51, p. 613.)

46061. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ. Tu-chung.

From China. Procured by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

"A Chinese caoutchouc tree, found wild on densely forested mountain slopes in southwestern Shensi and southeastern Kansu; also much cultivated in gar-

dens and planted here and there along roadsides. This tree has the peculiar property of exhibiting rubberlike threads of shining whitish color when pieces of bark or leaf are snapped across, but it shows this peculiarity more strongly in its winged fruits. On this account it is called *Shih mien shu*, meaning 'stone-cotton tree,' reference being made apparently to the resemblance of this caoutchouc or rubber to asbestos. This tree reaches a height of 80 feet and seems to grow best when sheltered by other trees. It might prove of value as a quick-growing ornamental tree for parks in those sections of the United States where the winters are not too severe." (Meyer.)

For previous introduction, see S. P. I. No. 40028.

46062 and 46063.

From China. Collected in Kih sien, Honan Province, by Mr. G. D. Schlosser, at the request of Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received May 9, 1918.

46062. *CELTIS SINENSIS* Pers. Ulmaceæ.

Hackberry.

A tree, native to China and Japan, growing to a height of 30 feet. The broadly ovate leaves, 2 to 4 inches long, are cordate at the base and acuminate at the apex, with a serrate-dentate margin. The dull orange-red fruits are borne on stout pedicels. This tree has proved hardy at the Arnold Arboretum, Jamaica Plain, Mass. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 710.)

46063. *PYRUS CALLERYANA* Decaisne. Malaceæ.

Pear.

Introduced for experiments in producing a blight-resistant stock for cultivated varieties of pear and for hybridizing, in an effort to produce blight-resistant varieties.

46064 to 46073.¹

From Santos, Brazil. Procured by Mr. C. F. Deichman, American consul. Received May 9, 1913. Quoted notes by Mr. Deichman.

46064 to 46072. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46064. "No. 1. *Mulatinho claro* (brown bean; light color)."

46065. "No. 2. *Mulatinho oscuro* (brown bean; dark color)."

46066. "No. 4. *Vermelho* (red bean)."

46067. "No. 5. *Amarelo* (yellow bean)."

46068. "No. 6. *Preto* (black bean)."

46069. "No. 7. *Branco grande* (white bean; large)."

46070. "No. 8. *Branco miudo* (white bean; small)."

46071. "No. 9. *Manteiga* (butter bean)."

46072. "No. 10. *Pintado* (spotted bean)."

46073. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

"No. 3. *Fradino* (dwarf or French bean)."

¹ Introduced for use in a large series of experiments in testing and breeding varieties of South American legumes for the purpose of selecting or developing superior strains suited to the various conditions obtaining in different parts of the United States.

46074 and 46075.

From Brisbane, Australia. Presented by Mr. L. G. Corrie. Received May 2, 1918.

46074. *Gossypium barbadense* × *hirsutum*. Malvaceæ. Cotton.

"*Jones's hybrid*. This variety was first observed in numerous fields of cotton in 1906. and, as far as can be surmised, is a sport originating from a Sea Island variety (Seabrook) and an Upland type (Russell's Big Boll)." (Quoted from an article by Mr. D. Jones in the *Queensland Agricultural Journal* for March, 1916, p. 153.)

46075. *Ricinus communis* L. Euphorbiaceæ. Castor-bean.

"*Bancroft's hybrid*." Seed an inch long by five-eighths of an inch broad; light gray with irregular reddish brown markings. Introduced for experiments in testing the oil content of various forms.

46076. *Solanum tuberosum* L. Solanaceæ. Potato.

From Bogota, Colombia. Tubers presented by Mr. Jorge Ancizar. Received May 7, 1918.

"*Papa criolla*. Tubers shaped like the common potato, but only about an inch in shortest diameter. The Creole potatoes come out in three months and are delicious fried with their skins." (Ancizar.)

For previous introduction, see S. P. I. No. 44580.

46077 to 46079.

From Cheshunt, Hertford, England. Plants purchased from Paul & Sons. Received May 9, 1918. Quoted notes by Dr. Walter Van Fleet.

46077. *Rosa foetida* Herrmann. Rosaceæ. Rose.
(*R. lutea* Mill.)

"*Austrian Brier*. Single bloom. Supposed to be a garden representative of *Rosa foetida*, probably very near the type. Shrub 5 to 6 feet tall, branches slender, arching, and armed with short prickles, flowers 2 or more inches in diameter, bright golden yellow, in sparse clusters. Desirable for breeding yellow-flowered varieties."

46078. *Rosa chinensis* Jacq. Rosaceæ. Rose.

"*Red-Letter Day*. Garden form of *Rosa chinensis*. Dwarf shrub with erect stems growing about 2 feet high. Flowers single or semi-double, intense scarlet-crimson, best of its color. Desirable for breeding."

46079. *Rosa* sp. Rosaceæ. Rose.

"*Mrs. Emily Gray*. *Jersey Beauty* × *Rosa pernetiana*. *Jersey Beauty* has for parents *Rosa wichuraiana* and *Perle de Jardines*, the latter a yellow-flowered form of *R. odorata*. *Mrs. Emily Gray* is said to be the best yellow-flowered form of the *wichuraiana* type that has been developed. Desirable for breeding."

46080 to 46110.

From Darjiling, India. Presented by Dr. G. H. Cave, director, Lloyd Botanic Garden. Received May 11, 1918.

46080. *Boehmeria macrophylla* D. Don. Urticaceæ.

A pretty shrub with narrow, dentate leaves 6 to 12 inches in length and very long, drooping flower spikes. It is a native of Upper Burma and northeastern India, where it ascends to an altitude of 4,000 feet. The wood is light reddish brown and moderately hard, and the bark

46080 to 46110—Continued.

yields a good fiber which is used for ropes and fishing lines. (Adapted from *J. S. Gamble, Manual of Indian Timbers*, p. 658, 1902.)

For previous introduction, see S. P. I. No. 44860.

46081. CALLICARPA RUBELLA Lindl. Verbenaceæ.

An erect, single-stemmed shrub up to 20 feet in height, native of northern India and China. The branches and leaves are horizontal, the latter being cordate-oblong, softly pubescent above and tomentose beneath, with crenate-serrate margins. The small cymes, 2 inches across, of pink flowers are followed by small purple berries. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 569.)

46082. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.).

A shrubby perennial, 4 to 7 feet high, with soft pubescent leaves and white flowers, native to the northern part of India up to an altitude of 3 000 feet. It is used as a cover crop and as a green manure. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, 2d ed., p. 39.)

46083. FRAXINUS FLORIBUNDA Wall. Oleaceæ. Ash.

"This is a large deciduous tree found growing in the Himalayas from Indus to Sikkim, between 5,000 and 8,500 feet. A concrete, saccharine exudation called manna is obtained from the stem of this tree and is employed as a substitute for the officinal manna. The sugar mannite, contained in this exudation, differs from cane and grape sugar in not being readily fermentable, although under certain conditions it does ferment and yields a quantity of alcohol varying in strength from 13 to 33 per cent. Like the officinal manna, this is used for its sweetening and slightly laxative properties. The wood is white with a reddish tinge and soft to moderately hard in structure, resembling in some respects the European ash. This tree is very valuable and is used in the manufacture of oars, sampan poles, plows, platters, spinning wheels, and for many other purposes." (*Watt, Dictionary of the Economic Products of India*, vol. 3, p. 442.)

46084. LAUROCERASUS ACUMINATA (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook.) **Cherry laurel.**

A tree, 30 to 40 feet high, found in the temperate portions of the central and eastern Himalayas, at altitudes of 4,000 to 7,000 feet. The branches are slender, with flat, smooth leaves 4 to 7 inches long, and yellowish white flowers one-fourth to one-third of an inch across in many-flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

For previous introduction, see S. P. I. No. 44092.

46085. LILIUM GIGANTEUM Wall. Liliaceæ. Lily.

A tall lily, up to 12 feet in height, found in the Himalaya Mountains from Kumaon and Gurhwal to Khasi and Sikkim in India. The 12 to 20 scattered, deep-green leaves are 12 to 18 inches in diameter on petioles a foot long at the base of the stem, reducing in size toward the top. The 6 to 12 deliciously fragrant flowers are 6 inches long and nearly as broad. The waxy segments of the perianth are purplish green outside, citron yellow changing to white inside, with purple midribs. The stamens are yellow. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1877.)

46080 to 46110—Continued.

46086. *LILIUM NEPALENSE* D. Don. Liliaceæ.

Lily.

The beautiful reflexed flowers are very striking in appearance, being citrion yellow toward the edge and deep maroon-purple or almost black within. If *L. nepalense* were only a little hardier it would doubtless be the most popular of all the oriental lilies. It is a native to the Himalayan region. (Adapted from *The Garden*, vol. 78, p. 159.)

46087. *MICHELIA CATHCARTII* Hook. f. and Thoms. Magnoliaceæ.

"This is a large tree which is found in the temperate forests of the Sikkim Himalayas at altitudes of 5,000 to 6,000 feet. The sapwood is large and white in color, while the heartwood, which is moderately hard, is a dark olive brown. The wood of this species is used for planking and would do well for tea boxes." (Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 241.)

For previous introduction, see S. P. I. No. 41814.

46088. *MICHELIA EXCELSA* Blume. Magnoliaceæ.

A tall tree found at an altitude of 5,000 feet on the Himalayas and in the Khasi Hills in India. The twigs, the under sides of the leaves, and the flower buds are covered with soft, silky, brown pubescence. The leaves are oblong and acute, and the white flowers are 5 inches across, with about 12 segments to the perianth. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46089. *MICHELIA LANUGINOSA* Wall. Magnoliaceæ.

A medium-sized tree with grayish white, tomentose twigs, native to India on the temperate slopes of the Himalayas up to an altitude of 7,000 feet. The oblong or lanceolate leaves, 10 inches long and 3 inches wide, on short petioles, are glabrous above and white tomentose underneath. The white flowers, 4 inches across, have about 18 perianth segments varying from obovate and obtuse outside to lanceolate and acute near the center. The fruit is densely woolly. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

46090. *MUCUNA MACROCARPA* Wall. Fabaceæ.

A woody climber found on the lower slopes of the Himalayas and in the Khasi Hills up to an altitude of 6,000 feet. The leaves are made up of three subcoriaceous, ovate leaflets, 6 to 8 inches long. The fascicled racemes of purple flowers, 3 inches long and 2 inches wide, are followed by pods 1½ feet long by 2 inches wide, containing 8 to 12 flattened-orbicular seeds. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 186.)

46091. *NYSSA SESSILIFLORA* Hook. f. and Thoms. Cornaceæ.

This is a large tree found in the forests of the Sikkim Himalayas above 5,000 feet; also in Martaban between 4,000 and 6,000 feet. The wood is gray, soft, and even grained, and is used for house building and other purposes about Darjiling. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 438.)

46092. *PODOPHYLLUM EMODI* Wall. Berberidaceæ.

May-apple.

This plant is herbaceous, about a foot in height, with only two leaves, which are alternate on long stalks, palmately three to five lobed, purple spotted, and glabrous. The flower is solitary, axillary, or raised above the axil, nodding, cup shaped, white or pale rose colored. The berry is

46080 to 46110—Continued.

deep red in color and though described as tasteless is, it is said, sometimes eaten. (Adapted from *Gardeners' Chronicle*, 2d ser., vol. 18, p. 241.)

46093. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ.
(*P. puddum* Roxb.)

A large tree, making a brilliant appearance when in flower, native to northern India at altitudes of 3,000 to 8,000 feet. The leaves are ovate to lanceolate, 3 to 5 inches long, with doubly serrate margins. The flowers, which appear before the leaves, are either solitary or in umbels and are rose-red or white. The acid fruits, on prominently thickened pedicels, are oblong and have a thin yellowish or reddish flesh. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314.)

46094. *PRUNUS NAPAULENSIS* (Seringe) Steud. Amygdalaceæ. **Cherry.**

A small tree native to the temperate Himalayas at altitudes of 6,000 to 10,000 feet. The leaves are 4 to 6 inches long, broadly lanceolate with a sharp point, and crenate on the margins. The racemes, often 10 inches long, of white flowers, are followed by globose fruits nearly three-fourths of an inch in diameter with smooth, thick-walled stones. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 316.)

46095. *PYRULARIA EDULIS* (Wall.) DC. Santalaceæ.

A medium-sized thorny tree native to the tropical slopes of the Himalayas up to an altitude of 5,000 feet. The leaves are 3 to 7 inches long, rather fleshy, oblong, with entire margins. The staminate flowers are in racemes, and the pistillate are solitary, producing edible pear-shaped drupes, 2 inches long. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 230.)

46096. *RHUS JAVANICA* L. Anacardiaceæ. **Sumac.**
(*R. semialata* Murray.)

"A sumac, found on stony mountain slopes, in ravines, and in wild places; growing into a tall shrub or a small tree. Leaves large, light green, pubescent, winged. Fruits borne in large spikes; berries coated with a sticky whitish wax which burns readily. The Chinese do not seem to utilize this wax in any way. Of value as an ornamental park shrub for the mild-wintered sections of the United States." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 40716.

46097. *ROSA MACROPHYLLA* Lindl. Rosaceæ. **Rose.**

A shrub native to the Himalayas and western China, becoming 8 feet or more in height, with erect stems and arching branches usually furnished with straight prickles up to half an inch in length. The leaves, which are composed of 5 to 11 leaflets, are up to 8 inches in length. The deep-pink or red flowers are up to 3 inches in width and are produced singly or in clusters of varying number. The elongated, pear-shaped fruits are bright red. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 433.)

For previous introduction, see S. P. I. No. 43900.

46098. *ROSA SERICEA* Lindl. Rosaceæ. **Rose.**

The flowers are slightly cupped, pale pink or blush, almost white in the center, and the leaflets are small, with several deep serratures at the apex. (Adapted from *Journal of Horticulture*, vol. 43, p. 7.)

46080 to 46110—Continued.

46099. RUBIA CORDIFOLIA L. Rubiaceæ.

Madder.

An herbaceous creeper with perennial roots, which is met with in the hilly districts of India from the northwestern Himalayas eastward and southward to Ceylon. The Manjit root or East Indian madder is obtained for the most part from this species and is much employed by the natives of India for dyeing coarse cotton fabric or the threads from which it is woven various shades of scarlet, coffee brown, or mauve. The East Indian madder of commerce consists of a short stalk from which numerous cylindrical roots, about the size of a quill, diverge. These are covered with a thin brownish pulp which peels off in flakes, disclosing a red-brown bark marked by longitudinal furrows. Many different methods are used for dyeing with this madder, a short account of which may be found in Watt, Dictionary of the Economic Products of India, from which this description is adapted.

For previous introduction, see S. P. I. No. 39656.

46100. SAMBUCUS ADNATA Wall. Caprifoliaceæ.

Elder.

An ornamental perennial allied to the elderberry, with cymes of fragrant white flowers, 10 inches across, followed by bright-red fruits.

For previous introduction, see S. P. I. No. 41596.

46101. SAMBUCUS JAVANICA Reinw. Caprifoliaceæ.

Elder.

"This is a very widely distributed species ranging from the Malayan Archipelago to central Japan and western China and also found in eastern Africa. It is characterized by the slender-pedicled flowers, the presence of conspicuous abortive flowers, and the very wide and loose inflorescence with the longer rays subthyrsoid. It has red fruits and shows a tendency to have the upper leaflets more or less adnate to the rachis and sometimes decurrent." (*Sargent, Plantae Wilsonianae, vol. 1, p. 307.*)

For previous introduction, see S. P. I. No. 39671.

46102. SAURAUJA NAPAULENSIS DC. Dilleniaceæ.

A medium-sized tree found at altitudes of 5,000 to 7,000 feet in the Himalayas. The young parts of the tree are covered with scurfy tomentum mixed with brown scales. The leaves, 10 inches long and 4 inches wide, are grouped at the ends of the branches and are oblong-elliptic in outline with deeply serrate margins. The pink flowers, half an inch across, occur in axillary panicles and are followed by green, edible, sweet fruits with mealy flesh. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

46103. SOLANUM KHASIANUM C. B. Clarke. Solanaceæ.

An herbaceous perennial from the Khasi Hills in India, with stout stems densely covered with yellow hairs and having straight prickles two-thirds of an inch long. The leaves, 7 inches long by 5 inches wide, are deeply lobed, hirsute, and prickly on both surfaces. The flowers, nearly an inch broad, are borne in lateral 1 to 4 flowered racemes, and the globose fruits are an inch in diameter. (Adapted from *Hooker, Flora of British India, vol. 4, p. 234.*)

46104. SORBUS CUSPIDATA (Spach) Hedl. Malaceæ.
(*Pyrus vestita* Wall.)

A deciduous tree which is a native of the eastern Himalayas and may be found growing from Gurhwal to Sikkim, at altitudes between 9,000

46080 to 46110—Continued.

and 10,000 feet. The fruit is edible and is sometimes used as food. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 377.)

For previous introduction, see S. P. I. No. 39133.

46105. *SORBUS FOLIOLOSA* (Wall.) Spach. Malaceæ. Mountain ash.
(*Pyrus foliolosa* Wall.)

A small tree with densely woolly young shoots, found on the temperate slopes of the Himalayas. The pinnately compound leaves, 4 to 6 inches long, are made up of five to nine pairs of linear-lanceolate, obscurely serrate, coriaceous leaflets. The compound, tomentose corymbs of white flowers are followed by very small ovoid fruits. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 376.)

46106. *SORBUS INSIGNIS* (Hook. f.) Hedl. Malaceæ. Mountain ash.
(*Pyrus insignis* Hook. f.)

"A small very robust tree, native of the Sikkim Himalayas at altitudes ranging from 8,000 to 11,000 feet. The branchlets are nearly as thick as the little finger, and the bud scales are rigid, chestnut brown in color, and shining. The younger parts are clothed with long, rather silky, rusty-brown wool, while the older parts are glabrous." (Hooker, *Flora of British India*, vol. 2, p. 377.)

For previous introduction, see S. P. I. No. 39134.

46107. *STYRAX HOOKERI* C. B. Carke. Styracaceæ.

"This is a small tree frequently met with in Sikkim and Bhutan at altitudes between 6,000 and 7,000 feet. The wood is white, close grained, and moderately hard." (Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 385.)

For previous introduction, see S. P. I. No. 41815.

46108. *SYMPLOCOS THEAEFOLIA* D. Don. Symplocaceæ.

An erect tree of the eastern Himalayas, from Nepal to Bhutan, occurring at altitudes between 4,000 and 6,000 feet. It is common also in the Khasi Hills and in Martaban. The leaves of this species are used as an auxiliary with *Morinda tinctoria* and lac in dyeing. The wood is white and soft and is used for fuel and for rough house posts. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 400.)

46109. *VIBURNUM ERUBESCENS* Wall. Caprifoliaceæ.

A tall shrub or small tree common on the Himalayas up to an altitude of 10,000 feet. It has small ovate leaves, 3 inches long and 1 inch wide, and small pendulous corymbs of white flowers. The red, ellipsoid fruits are one-fourth of an inch long. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 7.)

46110. *ZANTHOXYLUM OXYPHYLLUM* Edgeworth. Rutaceæ.

An alternate-leaved shrub, with hooked prickles, native to the temperate and subtropical slopes of the Himalayas at altitudes of 4,000 to 9,000 feet. The pinnately compound leaves, about a foot long, have 3 to 10 pairs of ovate to elliptic leaflets with crenate-serrate margins. The flowers occur in many-branched umbellate cymes; and the tubercled fruits, the size of a pea, open transversely, showing the black seeds. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 294.)

46111 to 46118. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Reading, England. Tubers presented by Sutton & Sons. Received April 20, 1918.

46111. Sutton's *Harbinger*.

46112. Sutton's *Gladiator*.

46113. Sutton's *Early Ashleaf*.

46114. Sutton's *Drummond Castle*.

46115. Sutton's *Edinburgh Castle*.

46116. Sutton's *Berwick Castle*.

46117. Sutton's *Carrisbrooke Castle*.

46118. Sutton's *Dunnottar Castle*.

46119. EUCOMMIA ULMOIDES Oliver. Trochodendraceæ.**Tu-chung.**

From Suilokuo, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

An interesting deciduous tree somewhat resembling an elm in habit and foliage. The leaves and bark contain a remarkable substance resembling rubber.

For previous introduction and description, see S. P. I. No. 46061.

46120. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The *yang-tao*, as this deciduous climber is known in Szechwan Province, where it is native, has attracted considerable attention from travelers and missionaries in China, because of the high quality of its fruits and the ornamental value of the plant. Single plants often grow 30 feet in length, so that the vine will cover large areas of trellis. The leaves have a plushlike texture and an unusual dark-green color. The young shoots are bright pink and villous pubescent. The size and regular spacing of the leaves make this climber valuable where large areas of foliage are desired. The flowers are buff yellow to white, fragrant, and large size, being from 1 to 1½ inches in diameter. The abundance of these flowers adds greatly to the beauty of this plant and enhances its value as an ornamental. The following account of the fruit was written by Mr. Wilson while in China:

"Fruits abundantly produced, ovoid to globose, russet brown, more or less clothed with villous hairs. Flesh green, of most excellent flavor, to my palate akin to that of the gooseberry, but tempered with a flavor peculiarly its own."

The fruit is excellent when fresh, and it also makes very fine jam and sauce. Full information is lacking in regard to the fruit grown outside of China; some fruits received from California, however, bear out the high praise given the fruit by travelers. While this plant is not hardy in regions of severe winters, the rapid growth in the spring will make it a valuable ornamental, even in those regions where it is killed to the ground each winter. Vines have lived and made excellent growth near Washington during the

past eight years, but have not fruited. As an ornamental alone it is a very valuable vine. See David Fairchild, "Some Asiatic Actinidias," in Bureau of Plant Industry Circular No. 110, pp. 7-12.

For previous introduction, see S. P. I. No. 45588.

46121. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 146b. Hingshanhsien, Hupeh, China. December 27, 1917.) A large specimen fruit. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46122. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

From Concepcion, Paraguay. Presented by Mr. T. R. Gwynn. Received June 15, 1918.

"Seeds of a squash which the Indians grow in this country. The plant is identical with the 'white bush scallop' squash; the fruit is somewhat smaller, of the same shape, and yellowish when mature." (Gwynn.)

46123. CITRUS MEDICA L. Rutaceæ. Citron.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"(No. 148b. Ichang, Hupeh, China. December 21, 1917.) *Foo-tao* or *Foo-sohtao*. Used as perfumers; also to give flavor to alcoholic drinks." (Meyer.)

46124. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Grafted plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution.

A perfect-flowered variety which was grown from seed received under S. P. I. No. 21781. The original plant of this introduction was sent to Mr. William Hertrich, San Gabriel, Calif. Scions from this plant were presented by him during the summer of 1917.

For description, see No. 46120.

46125 to 46130.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918. Numbered May, 1918.

46125. CITRUS sp. Rutaceæ.

"(155b. Ichang, Hupeh, China. December 21, 1917.) A hybrid of pummelo *Hsiang gan tze* and sweet orange (?) said to have come from Szechwan."

46126. CITRUS AURANTIUM L. Rutaceæ.

"(156b. Across the Yangtze near Ichang, Hupeh, China. December 22, 1917.) A bitterish orange resembling a large lemon called *Tsen tze*. Scions sent under No. 1297 [S. P. I. No. 45941.]"

46125 to 46130—Continued.

46127. CITRUS sp. Rutaceæ.

"(157b. Changyanghsien, Hupeh, China. December 9, 1917.) An orange resembling a lemon. Chinese name *Ba ehr gan*. Scions sent under No. 1291 [S. P. I. No. 45934]."

46128. CITRUS ICHANGENSIS Swingle. Rutaceæ.

Ichang lemon.

"158b. Various types from divers localities."

46129. CHAENOMELES LAGENARIA CATHAYENSIS (Hemsl.) Rehder. Malaceæ.
(*Pyrus cathayensis* Hemsl.)

"(159b. Ichang, Hupeh, China. December 21, 1917.) *Mu kua*. Used as a room perfumer."

46130. CHAENOMELES SINENSIS (Thouin) Koehne. Malaceæ.

(Pyrus sinensis Poir.)

Chinese quince.

"(160b. Ichang Hupeh, China. December 31, 1917.) *Mu li*. It might possibly prove a good stock for loquats and pears in the Gulf States. Used as a room perfumer."

For an illustration of a full-sized tree, see Plate V.

46131. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Plants grown from the seed of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif., by Mr. William Hertrich, San Gabriel, Calif., in the summer of 1917. Numbered for convenience in recording distribution.

For previous introduction, see S. P. I. No. 46124.

46132. CITRUS sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer. Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

"Large fruit, about 4 inches in diameter." (W. T. Swingle.)

46133 to 46135.

From New South Wales, Australia. Presented by Mr. B. Harrison, Burringbar. Received June 15, 1918.

46133. CHAETOCHLOA NIGRIROSTRIS (Nees) Skeels. Poaceæ. Grass.
(*Setaria nigrirostris* Dur. and Schinz.)

A hardy tufted grass which has made good growth. Although the leaves are a little hard, there is a very large quantity in proportion to the stem; appears to be a quick succulent grower; carries a good quantity of seed; and grows well in New South Wales. (Adapted from an article by E. Breakwell, in *Agricultural Gazette, New South Wales, Feb. 2, 1916.*)

46134. GOSSYPIMUM sp. Malvaceæ.

Cotton.

"Harrison's Hybrid. A most prolific variety hybridized by myself from Caravonica and Indian Burhi. The cotton is of splendid quality. From a 3-year-old tree." (Harrison.)

46135. OPUNTIA sp. Cactaceæ.

Cactus.

"A spineless and seedless cactus which has been produced by me after several years of careful cultivation and which should prove of real value

46133 to 46135—Continued.

in the semiarid sections of the United States. Stock eat it with great avidity even when grass is abundant; and as it is closely related to the sweet-leaf cactus (*Opuntia cochenilifera*), its feeding value is much greater than the other varieties commonly used for fodder." (*Harrison.*)

46136. PISTACIA CHINENSIS Bunge. Anacardiaceæ.**Chinese pistache.**

From Changsha, Hunan, China. Purchased from Mr. J. H. Reisner, University of Nanking, Nanking, through Mr. Nelson T. Johnson, American consul. Received at the Plant Introduction Field Station, Chico, Calif., June 20, 1918.

"*Huang lien shu.* A very promising shade tree for those sections of the United States where the summers are warm and the winters but moderately cold. The young leaves are carmine red and the fall foliage gorgeously scarlet and yellow. The wood, which is very heavy and not often attacked by insects, is employed in the manufacture of furniture. From the seeds an oil is obtained which is used for illuminating purposes. The young, partly expanded foliage buds are sparingly eaten when boiled, like spinach. The staminate trees invariably grow larger and more symmetrical than the ones that bear the pistillate flowers." (*F. N. Meyer.*)

For previous introduction, see S. P. I. No. 45593.

46137. DERINGA CANADENSIS (L.) Kuntze. Apiaceæ. Mitsuba.
(*Cryptotaenia canadensis* DC.)

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 20, 1918.

This plant, which is allied to celery, parsnips, and carrots, has been cultivated by the Japanese for many generations. Mr. Lathrop, in sending in seed purchased from the Yokohama Nursery Co., says: "Mitsuba, they say, costs less than udo, and far more of it is consumed by the poor. Every part of the plant is eaten, and its leaves, stems, and roots are cooked as desirable edibles. They say also that the stems, besides being cooked, are eaten as celery is with us. Like udo, it grows in light, rather poor soil; is planted from seed, but requires less care in growing, and reaches the market at far less expense. To use their own expression, 'Mitsuba is popular with everybody from the highest rank to the lowest.'" Mr. Lathrop also procured the following statement from the Yokohama Nursery Co. on its culture and uses:

"Sow the seed any time from September to about the middle of April in rows about 1½ to 2 feet apart, somewhat thickly in bands 5 to 6 inches wide, and cover lightly with soil. After the seedlings are an inch or so tall, thin out to 2 to 3 inches apart; they grow best in partially sheltered moist places. In central Japan, where the climate is mild, the seed is usually sown in spring, from about March until May, between the furrows of wheat, barley, or beans, which give enough shade to the young seedlings; if the seed be sown in full exposure after May it will not germinate, so it is essential to sow the seed before the weather gets too warm. After wheat, barley, or beans are harvested the ground should be hoed and manured with liquid oil cake or bone meal, to invigorate the roots. After the leaves and stalks die, from about December, the roots can be dug and brought into the forcing frame or malt bed; or they can be left alone in the field, and just before the new growth begins to show early in spring, heap up 5 to 6 inches of soil, in the same manner as asparagus is cul-

tivated. They are fit for market when the young sprouts begin to break through the surface of the soil. The roots, being perennial, can be used over and over again for two to three years after the stalks are cut off, but, as the roots are also edible, it is usual to dig up the whole plant; moreover, the young stalks keep better with the roots on.

"In cold regions, like Hokkaido or northern Hondo, the roots must be well covered with earth in winter. The seeds collected from 1-year-old plants are considered to be worthless, as they give rise to plants which run to flowering shoots the first year. Properly, the seed should be collected from 2-year-old plants. The seed keeps its vitality for three years. Twenty pounds are required per acre. The average crop of last two seasons realized about \$200 per acre in Japan.

"As to soil, loam with plenty of moisture is preferable, but light black soil or any other light soil, provided the ground is not too dry, serves very well.

"Cooking methods: (1) The green leaves and stalks are eaten raw, with vinegar and sauce as a salad; also they are used as an ingredient in soups, imparting a good flavor. (2) The young blanched stalk is eaten raw like celery; or, after boiling, is eaten like asparagus, with sauce. Either way it is edible, skin and all. (3) The roots, after the young blanched stalks are cut off, are chopped into pieces about 1½ inches long and parched in a pan with lard or butter until they get quite tender; then sugar and soy is added according to taste. There are several other methods of cooking, but the above will be found the most suitable for the foreign palate."

Received as *Cryptotaenia japonica*.

For previous introduction, see S. P. I. No. 45247.

46138. *HIBISCUS MACROPHYLLUS* Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 22, 1918.

A tree or shrub of eastern Bengal and the Eastern Peninsula, the bark of which yields a strong cordage fiber valued by the Burmans. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 4, p. 242.)

46139. *CITRUS* sp. Rutaceæ.

From Ichang, Hupeh, China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received February 25, 1918.

The fruit was decomposed and the label accompanying it illegible.

46140. *CASSIA GRANDIS* L. f. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received June 25, 1918.

"A small wing-leaved tree of the legume family, producing an abundance of yellow flowers native to the East Indies and now common in most tropical countries. It produces a smooth cylindrical pod twice the thickness of the finger and sometimes 2 feet in length. The interior is divided into numerous transverse portions, each containing a seed embedded in pulp of a sweet taste, which forms an important laxative medicine. The leaves, as also those of *C. alata*, are used as a cure for ringworm." (*Smith, Dictionary of Popular Names of Economic Plants*.)

For previous introduction, see S. P. I. No. 33781.

46141 to 46145.¹ PHASEOLUS COCCINEUS L. Fabaceæ.**Scarlet Runner bean.**

46141. No. 1. Dark brown, mottled with white and light brown.
 46142. No. 2. Deep livid² or vinaceous brown, mottled with black.
 46143. No. 3. Livid brown, not mottled.
 46144. No. 4. Cinnamon or avellaneous, not mottled.
 46145. No. 5. Cinnamon or avellaneous, mottled.

46146. SALVIA HISPANICA L. Menthaceæ.

From Coyoacan, Mexico. Presented by Mrs. Zelia Nuttall. Received May 14, 1918.

An herbaceous perennial with ovate, serrate leaves and quadrangular spikes of blue flowers. The mucilaginous seeds are used in making the Mexican drink called "chia."

46147. ASTROCARYUM POLYSTACHYUM Wendl. Phœnicaceæ. Palm.

From San Jose, Costa Rica. Presented by Mr. Ad. Tonduz, Administracion General de la Tributacion Directa. Received May 16, 1918.

Coyolillo. "Palm fruits collected in the Barra del Colorado, Atlantic coast of Costa Rica." (*Tonduz*.)

"A palm, 6 to 10 feet in height, with irregularly divided leaves. The round fruits, covered with bristles, are clustered in peduncled cones. From the hot districts of both coasts. 'Coyolillo' is perhaps applied to other species." (*Pittier, Plantas Usuales de Costa Rica, p. 85.*)

46148 to 46150.

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received May 17, 1918. Quoted notes by Sr. Arias-Feraud.

46148. ACHRAS ZAPOTA L. Sapotaceæ. Sapodilla.
(*A. zapota* L.)

"*Nisberry* seeds. This tree grows about 20 feet high and produces one of the best tropical fruits."

For previous introduction and description, see S. P. I. No. 44890.

46149. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"Yellow anona seeds. Nice fruits."

46150. CHRYSOPHYLLUM CAINITO L. Sapotaceæ. Caimito.

"Purple *star-apple* seeds."

A handsome tropical American fruit and ornamental tree, evergreen, up to 50 feet high, with beautiful broad leaves, smooth and green above and silky and golden yellow on the under surface. Fruit the size of an apple with star-shaped core and purple flesh and skin. The pulp is said to be delicious if the fruit is left on the tree until ripe. Will not stand frost.

¹ See footnote on page 19.

² The names of colors accord with Ridgway's Color Standards and Nomenclature.

46151 to 46160.¹

From Peru. Presented by Luis Roos & Co., of Callao, Peru, through Mr. W. W. Handley, American consul. Received May 17, 1918. Quoted notes by Mr. Roos.

46151. *CICER ARIETINUM* L. Fabaceæ. Chick-pea.

"No. 1. *Garbanzos*. These are grown at Pacasmayo and Chincha."

46152. *LENTILLA LENS* (L.) W. F. Wight. Fabaceæ. Lentil.
(*Lens esculenta* Moench.)

"No. 3. *Lentejas*. These are grown at Trujillo."

46153. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"No. 7. *Pallares*. These are from Chincha."

46154 to 46157. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46154. "No. 2. *Panamitos*. These are from Pacasmayo, the same kind of bean as grown at Chincha, but of a much better quality."

46155. "No. 5. *Negros*. These are from Chincha."

46156. "No. 6. *Bayos*. These are grown in the northern part of Peru, the principal market being San Pedro and Guadalupe (Pacasmayo)."

46157. "No. 9. *Cocachos*. These are from Chincha."

46158 and 46159. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

46158. "No. 10. *Alverja verde*. These are grown at Trujillo."

46159. "No. 4. *Alverja amarilla*. These are grown all over the northern part of Peru. Principal market, Pacasmayo."

46160. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"No. 8. *Castilla*. These are grown at Casma."

46161 to 46163.¹

From Buenos Aires, Argentina. Procured by Mr. W. Henry Robertson, American consul general. Received May 18, 1918. Quoted notes by Mr. Robertson.

46161. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"*Porotos manteca*."

46162. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"*Porotos saltenos*."

46163. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"*Porotos tapes*."

46164 to 46166.¹

From Montevideo, Uruguay. Presented by Mr. Domingo Basso, through Mr. William Dawson, American consul. Received May 18, 1918. Quoted notes by Mr. Basso.

¹ See footnote on page 19.

46164 to 46166—Continued.

46164 and 46165. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46164. "*Reyna*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) de la Reyna.'"

46165. "*Aguila*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as 'Poroto (bean) Aguila.'"

46166. *VICIA FABA* L. Fabaceæ. Broad bean.

"*Sevilla*. This seed is said to have been grown locally from imported Italian seed, and the variety is known locally as '*Haba* (bean) *Sevilla*.'"

46167 to 46177.¹

From Puerto Cabello, Venezuela. Procured by Mr. Frank A. Henry, American consul. Received May 21, 1918. Quoted notes by Mr. Henry.

46167 and 46168. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

46167. "*Quinchonchos*."

46168. "*Quinchonchos mulatos*."

46169 to 46171. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

46169. "*Tapiramos blanquineta*."

46171. "*Tapiramos blancos*."

46170. "*Tapiramos cocineras*."

46172 and 46173. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46172. "*Caraotas negras*."

46173. "*Caraotas rosadas*."

46174. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"*Chicharos*."

46175. *VIGNA CYLINDRICA* (Stickm) Skeels. Fabaceæ. Catjang.

"*Frijoles blancos*."

46176 and 46177. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

46176. "*Frijoles bayos*."

46177. "*Frijoles morados*."

46178 to 46183.¹

From Maracaibo, Venezuela. Purchased by Mr. Emil Sauer, American consul. Received May 21, 1918. Quoted notes by Mr. Sauer.

46178. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"*Caraotas coloradas*."

46179 to 46181. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46179. "*Caraotas negras*."

46181. "*Caraotas pintadas*."

46180. "*Caraotas bayas*."

46182 and 46183. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

46184 to 46191.¹

From Georgetown, British Guiana. Purchased by Mr. G. E. Chamberlin, American consul. Received May 21, 1918.

46184. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

46185. *DOLICHOS LABLAB* L. Fabaceæ. Purple bonavist bean.

¹ See footnote on page 19.

46184 to 46191—Continued.

46186. *DOLICHOS LABLAB* L. Fabaceæ. Bonavist bean.
 Variety unknown.
46187. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46188. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.
46189. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46190. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.
46191. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
 Also known as "Black-eyed bean."

46192. *HIBISCUS MACROPHYLLUS* Roxb. Malvaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 22, 1918.

A shrub or small tree, native to India, sparsely covered with brown, villous, tufted hairs. The orbicular-cordate leaves, about 6 inches across, with petioles 8 inches long, are usually entire and are covered underneath with dense hairs. The many-flowered terminal cymes are made up of purple flowers 4 inches in diameter. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 337.)

46193 to 46203.¹

From Antofagasta, Chile. Procured by Mr. Thomas W. Voetter, American consul. Received May 22, 1918. Quoted notes by Mr. Voetter.

46193. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.

"No. 8. *Pallares*."

46194. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"No. 9. *Pallares achatados*. Probably from Peru."

- 46195 to 46202. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46195. "No. 1. *Bayos*." 46200. "No. 6. *Frutillas* (strawberry)."

46196. "No. 2. *Burritos*."

46197. "No. 3. *Caballeros*." 46201. "No. 7. *Ovalitos*."

46198. "No. 4. *Canarios*." 46202. "No. 10. *Triguitos*."

46199. "No. 5. *Coscorrones*."

46203. *ZEA MAYS* L. Poaceæ. Corn.

"Province of Tacna, Chile. Used for toasting and for making 'chicha,' a fermented beverage."

46204. *GARCINIA MANGOSTANA* L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received May 25, 1918.

"This delicious fruit is about the size of a madarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color with here and there a bright, hardened drop of the yellow juice, which marks some injury to the rind when it was young. As these mangosteens are sold in the Dutch East Indies, heaped up on fruit baskets, or are made into long, regular bunches with thin strips of braided bamboo, they are as strikingly handsome as anything of the kind can well be; but it is only when the fruit is opened that its real beauty is seen. The rind is thick and tough and

¹ See footnote on page 19.

in order to get at the pulp inside it requires a circular cut with a sharp knife to lift the top half off like a cap, exposing the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is of a most delicate pink color and is studded with small yellow points formed by the drops of exuding juice. As you lift out of this cup, one by one, the delicate segments, which are the size and shape of those of a mandarin orange, the light pink sides of the cup and the veins of white and yellow embedded in it are visible. The separate segments are between snow white and ivory in color and are covered with a delicate network of fibers, and the side of each segment where it presses against its neighbor is translucent and slightly tinged with pale green. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him the more, and he invariably stops to admire the rapidly deepening color of the cut rind as it changes on exposure to the air from light pink to deep brown. The texture of the mangosteen pulp much resembles that of a well-ripened plum, only it is so delicate that it melts in your mouth like a bit of ice cream. The flavor is quite indescribably delicious and resembles nothing you know of; and yet it reminds you, with a long aftertaste, of all sorts of creams and ices. There is nothing to mar the perfection of this fruit, unless it be that the juice from the rind forms an indelible stain on a white napkin. Even the seeds are partly or wholly lacking, and when present they are so thin and small that they are really no trouble to get rid of. Where cheap and abundant, as in Java, one eats these fruits by the half peck and is never tired of them; they produce no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*David Fairchild.*)

46205. PHYLLOSTACHYS sp. Poaceæ.

Bamboo.

From Indio, Calif. Plants presented by Mr. Bruce Drummond, Government Date Garden. Received May 3, 1918.

"A package of the rhizomes from the giant bamboo that we have here at the garden. This is the bamboo growing on Mr. W. S. Tevis's place at Bakersfield, Calif. Plants were obtained by Mr. Rixford and sent to us in 1913. It is doing fine, and is the only bamboo we have here that is making a rapid spread.

"I have great hopes of the future use for this bamboo, even though it does not get higher than 20 or 25 feet. I think that we can utilize the canes in holding up the clusters of dates, which will be very necessary as our palms get older. It makes its growth in the early part of April." (*Drummond.*)

46206. CYMBOPETALUM PENDULIFLORUM (Dunal.) Baill. Annonaceæ.

Sacred earflower.

From Coban, Guatemala. Purchased from Mr. R. S. Anderson. Received May 3, 1918.

"A shrub or small tree with distichous, subsessile, oblanceolate leaves, solitary flowers borne on long slender peduncles issuing from the internodes of the smaller branches: sepals broadly ovate or suborbicular, cuspidate, reflexed at length; outer petals similar to the sepals but much larger; inner petals thick and fleshy, their margin involute, causing them to resemble a human ear. The pungently aromatic flowers when fresh are greenish yellow, with the inner surface of the inner petals inclining to orange color, at length turning brownish purple or maroon, breaking with a bright orange-colored fracture. The tree is planted for the sake of its fragrant flowers, the petals of which are dried and are used medicinally as well as for imparting a spicy flavor to food. They

were used by the ancient Mexicans, before the introduction of cinnamon and other spices from the East Indies, for flavoring their chocolate. This species is native to the mountains of southern Mexico and Guatemala." (W. E. Safford.)

46207 to 46217.¹

From Sao Paulo, Brazil. Procured by Mr. R. L. Keiser, American consul, from the Industrias Reunidas F. Matarazzo. Received May 25, 1918.

46207 to 46216. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46207. *Branços.* 46212. *Manteiga.*

46208. *Canario.* 46213. *Mulatinho.*

46209. *Cavallo brancos.* 46214. *Pretos.*

46210. *Cavallo marrão.* 46215. *Riscados.*

46211. *Cavallo mulatinho.* 46216. *Roxo.*

46217. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.
Frade.

"The seed transmitted is that known as *feijão secca*, or dry beans. The State of Sao Paulo produces two crops of beans annually, these being distinguished as wet and dry according to the season of growth. The *feijão mulatinho* produces three crops annually, maturing rapidly. The transportation for any considerable distance or the storage of the wet crop is difficult, owing to its tendency to damage by worms. The dry crop is practically free from this defect." (Keiser.)

46218. *DIOSCOREA BULBIFERA* L. Dioscoreaceæ. Yam.

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, Hawaii Agricultural Station. Received May 27, 1918.

Obtained for testing at various points in the South. Mr. Higgins states that it is not generally grown in Hawaii.

46219. *IPOMOEA BATATAS* (L.) Poir. Convolvulaceæ.
Sweet potato.

From Mayaguez, Porto Rico. Cuttings presented by Mr. T. B. McClelland, Agricultural Experiment Station. Received May 27, 1918.

"I am sending you cuttings of the sweet potato known locally as 'Mameya.'" (McClelland.)

46220. *LANSIUM DOMESTICUM* Jack. Meliaceæ. Langsat.

From Buitenzorg, Java. Presented by the Botanic Garden. Received May 27, 1918.

A moderate-sized ornamental tree, native to the Malay Peninsula. It bears long pendent clusters of closely packed berries which have a thin tough skin inclosing opaque aromatic juicy pulp. The berries are pale yellow when ripe and are said to be much relished in their native country, being "eaten fresh or variously prepared." It has been described as one of the finest fruits of the Malay Peninsula. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, 2d ed., p. 168.)

¹ See footnote on page 19.

46221. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Lawang, Java. Presented by Mr. M. Buysman, Experiment Station.
Received May 27, 1918.

"I have just sent you some seeds of a very good variety of *Annona squamosa*. Whether this will prove to come true from seed I do not know, but I think it might be tried." (*Buysman*.)

46222. CASSIA HIRSUTA L. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 28, 1918.

An ornamental shrubby or subshrubby plant. The finely cut pinnate leaves and short racemes of yellow flowers are quite attractive.

46223. ORYZOPSIS MILIACEA (L.) Benth. Poaceæ. Grass.

From Adelaide, South Australia. Purchased from E. & W. Hackett, Ltd.
Received May 29, 1918.

"A tufted perennial with loose, open panicles with spreading branches. A form with numerous sterile lower branches of the panicle is sometimes cultivated for ornament." (*A. S. Hitchcock*.)

46224. CORIARIA THYMIFOLIA Humb. and Bonpl. Coriariaceæ.

From Auckland, New Zealand. Presented by Mr. G. J. Clapham, Kohu Kohu. Received May 29, 1918.

A South American plant, the bark and roots of which are rich in tannin; the fruit is said to be rather poisonous.

For previous introduction and description, see S. P. I. No. 42817.

46225. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Yokohama, Japan. Presented by Mr. Barbour Lathrop. Received June 3, 1918.

Introduced for the experiments of the Office of Drug-Plant and Poisonous-Plant Investigations and not for general distribution.

46226 to 46234.¹

From Valparaiso, Chile. Presented by Mr. L. J. Kenna, American consul general. Received June 5, 1918.

46226. CICER ARIETINUM L. Fabaceæ. Chick-pea.
Garbanzo. (1917 crop.)

46227. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. Lentil.
(*Lens esculenta* Moench.)
Lentejas de Chillan. (Crop of 1917.)

46228. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.
Pallares. (Crop of 1917.)

46229 to 46232. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46229. Bayos. (Crop of 1917.)

46230. Caballeros. (Crop of 1917.)

46231. Coscorones. (Crop of 1917.)

46232. Zurritos. (Crop of 1917.)

¹ See footnote on page 19.

46226 to 46234—Continued.

46233 and 46234. *PISUM SATIVUM* L. Fabaceæ.

Garden pea.

46233. *Arvejas blancas*. (Crop of 1917.)46234. *Petit pois*. (1917 crop.)46235. *CACARA EROSA* (L.) Kuntze. Fabaceæ.

Yam bean.

(Pachyrhizus angulatus Rich.)

From Kingston, Jamaica. Presented by Mr. William Harris, Government botanist and superintendent of Public Gardens, Hope Gardens. Received June 6, 1918.

A twining tuberous-rooted vine cultivated throughout the Tropics for its edible roots, which are very palatable and are prepared for use in a number of different ways.

For previous introduction, see S. P. I. No. 44916.

46236. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ.*(Lucuma mammosa Gaertn. f.)*

Sapote.

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

"The most important member of the genus is without doubt the sapote, or mamey sapote, a common fruit in Cuba, and not infrequently seen on the Central American mainland. It is said to prefer a deep, rich soil and a rainfall of about 70 inches per annum. The fruit is commonly elliptical and is about 6 inches in length. Within the thick woody skin, somewhat rough and rusty brown on the surface, is the soft melting flesh, of a beautiful reddish salmon color and of about the same consistency as a ripe cantaloupe. The large elliptical seed can be lifted out of the fruit as easily as that of an avocado; it is hard, brown, and shiny, except on the ventral surface, which is whitish and somewhat rough. To one unaccustomed to tropical fruits the flavor of the mamey sapote is at first somewhat cloying, because of its utter lack of acidity; when made into a sherbet, however, as is done in Havana, it is delicious and sure to be relished at first trial. Although natives of tropical countries commonly eat the fruit while fresh, it is also made into marmalade or used as a 'filler' in making guava cheese. The Cubans prepare from it a thick jam known as *crema de mamey colorado*, which is delicious. The fruits are picked when mature and laid away in a cool place to ripen, which takes about a week. If shipped as soon as picked from the tree they can be sent to northern markets without difficulty and are occasionally exported from Cuba and Mexico to the United States. The season of ripening is during the summer; in Costa Rica the tree is said to lose its foliage in the dry season, flowering at the same time. The seed contains a large oily kernel which has a strong smell and a bitter taste. According to Pittier, it is used in Costa Rica, after being finely ground, to prepare an exquisite confection; the same authority states that it is sometimes used by the Indians, after being boiled, roasted, and ground, to mix with cacao, imparting a bitter taste to the beverage. The foliage of the mamey sapote resembles that of the loquat (*Eriobotrya japonica*), except in its lighter color and entire margins. Propagation is by seed, young trees coming into bearing at the age of 5 to 7 years. Before planting it is well to remove the hard outer husk from the seed; it is then easily germinated by planting in light sandy loam, barely covering it with soil." (*Wilson Popenoe.*)

46237. ACHRAS ZAPOTA L. Sapotaceæ. Sapodilla.*(A. sapota L.)*

From the city of Panama, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

46238. MANGIFERA INDICA L. Anacardiaceæ. Mangó.

From the city of Panamá, Panama. Presented by Sr. Ramon Arias-Feraud. Received June 8, 1918.

"Seeds of the best kind of mangos which we have here, called 'Calidad' (quality) mangos." (*Arias-Feraud.*)

46239. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.*(Prunus persica Stokes.)*

From Pretoria, Union of South Africa. Presented by Mr. I. B. Pole Evans, chief, Division of Botany, Department of Agriculture. Received June 8, 1918.

"*Transvaal yellow*. This variety is one of the hardiest we have in this country and the most immune to the more common fungous pests of the peach." (*Evans.*)

46240. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.*(Nephelium litchi Cambess.)*

From Honolulu, Hawaii. Procured from Mr. Chang Chong, through Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received June 17, 1918.

The lychee is a small tree, native to China, with dense foliage of rich green shiny leaves, racemes of greenish flowers, and clusters of spherical fruit about 1 inch in diameter. Each fruit contains one seed in a firm jellylike whitish pulp or aril of delicious flavor. In China the production of dried lychee fruit is a large industry. (Adapted from *Wilcox, Tropical Agriculture, p. 125.*)

Excellent results are now being obtained in rooting the cuttings in a moist chamber.

For previous introductions, see S. P. I. Nos. 40916 and 40973.

46241. LAWSONIA INERMIS L. Lythraceæ. Henna.*(L. alba Lam.)*

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received March 21, 1918. Numbered June, 1918.

An interesting shrub commonly known as henna, camphire, cypress shrub, or Egyptian privet, grown throughout India, Persia, Syria, and northern Africa, where its powdered leaves are used as a hair dye and as a cosmetic. It imparts a reddish orange color. Plants attain a height of 8 or 10 feet and bear smooth oval or lance-shaped entire leaves and panicles of small white sweetly scented flowers, which are used in perfumery. This species is reported as being a very useful and ornamental hedge plant. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 597.*)

46242. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.*(Sechium edule Swartz.)*

Fruits received in the autumn of 1916 from Mr. H. S. Zoller, Brooksville, Fla. Numbered, for convenience in distribution, June, 1918.

Zoller. A medium-sized, dark-green chayote; flat and broad pear shaped, noncorrugated, and almost free from spines.

46243 to 46248.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received May 21, 1918.

Legumes grown for green manure. Introduced for experimentation by the Office of Forage-Crop investigations.

46243. CASSIA PATELLARIA DC. Cæsalpiniaceæ.

A low, herbaceous perennial with somewhat the appearance of our common sensitive plant, *Cassia nictitans*.

46244. CASSIA PUMILA Lam. Cæsalpiniaceæ.

A spreading, subshrubby forage plant with numerous spreading stems about 1 foot long, distributed throughout tropical Asia and Australia.

46245. CROTALARIA ALATA Buch.-Ham. Fabaceæ.

A suberect undershrub, 1 to 2 feet high, with the stem and underside of the leaves covered with a short, silky pubescence. (Adapted from *Hooker, Flora of British India, vol. 2, p. 69.*)

46246. CROTALARIA USARAMOENSIS Baker f. Fabaceæ.

A spreading, herbaceous forage plant from Usaramo, German East Africa, closely allied to *C. lanceolata*. (Adapted from *Journal of the Linnean Society, vol. 42, p. 346.*)

46247. INDIGOFERA SUMATRANA Gaertn. Fabaceæ.

Indigo.

This is the form of *Indigofera tinctoria* that was introduced from the East into the West Indies, and is the *I. tinctoria* of Lunan. If, therefore, it be deemed necessary to give this plant a separate name and to remove it from being one of the cultivated states of *I. tinctoria* L., then it will have to be called *I. sumatrana* Gaertn. In addition to India (where it is largely in use in the north from Bihar and Tirhut westward by north to the Punjab) it also occurs in tropical Africa and Formosa. It may be distinguished from the southern form of *I. tinctoria* by its leaflets, which are larger and ovate-oblong or oblong, instead of obovate or suborbicular. The pods in *I. sumatrana* are also shorter, thicker, and blunter at the apex, and are usually more numerous and straighter than in the Madras form. (Adapted from *Watt, Commercial Products of India, p. 663.*)

46248. INDIGOFERA SUFFRUTICOSA Mill. Fabaceæ.

(*I. anil* L.)

A copiously branched shrub, 3 to 5 feet high, with yellow pealike flowers, commonly cultivated as a dye plant throughout the Tropics. Said to be a native of tropical America. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 98.*)

46249 to 46259.¹

From Sao Paulo, Brazil. Presented by Mr. Robert L. Keiser, American consul. Received May 25, 1918.

¹ See footnote on page 19.

46249 to 46259—Continued.

46249 to 46258. PHASEOLUS VULGARIS L. Fabaceæ.	Common bean.
46249. Branco.	46254. Manteiga.
46250. Canario.	46255. Mulatinho.
46251. Cavallo branco.	46256. Preto.
46252. Cavallo marrão.	46257. Riscado.
46253. Cavallo mulatinho.	46258. Roxo.
46259. VIGNA SINENSIS (Torner) Savi. Fabaceæ.	Cowpea.
Frade.	

46260 to 46281.¹

From Rio de Janeiro, Brazil. Presented by Mr. R. P. Mønsen, American vice consul, who obtained them from the Pan-America Hide Co. Received June 13, 1918.

46260. DOLICHOS LABLAB L. Fabaceæ.	Bonavist bean.
Mangalo.	
46261. PHASEOLUS CALCARATUS Roxb. Fabaceæ.	Rice bean.
Anão de China.	
46262. PHASEOLUS COCCINEUS L. Fabaceæ.	Scarlet Runner bean.
De trepar da Hespanha.	
46263 to 46280. PHASEOLUS VULGARIS L. Fabaceæ.	Common bean.
46263. Anão amarello.	46273. De trepar branco sem flamento.
46264. De segar preto.	
46265. Anão flageolet (green).	46274. De trepar mont odor.
46266. Anão flageolet.	46275. Mulatinho.
46267. De trepar manteiga preto.	46276. Manteiga.
46268. De trepar anao grande.	46277. Branco.
46269. Manteiga amarello.	46278. Preto.
46270. Anão cavallos.	46279. De trepar mangestant.
46271. De trepar D. Carlos.	46280. Anão flageolet (marron).
46272. De trepar marmoreado.	
46281. VIGNA SINENSIS (Torner) Savi. Fabaceæ.	Cowpea.
Chicote nojens grandes.	

46282 to 46293. ZEA MAYS L. Poaceæ. Corn.

From Panama. Presented by Mr. A. H. Verrill. Received June 18, 1918.

"While in the unexplored portion of the Darien district in Panama, I found the 'wild' Indians of the 'forbidden' country raising a number of interesting varieties of corn. These are all 'fixed' among the Indians and come true to seed, and several are used as sweet corn. These Indians consider corn as sacred and use great care in keeping the various kinds separate."

46282. Brown.	46288. Round, light orange.
46283. White, purple spotted.	46289. Pure white.
46284. Yellow.	46290. White, red striped.
46285. Deep orange.	46291. Pink.
46286. Deep red.	46292. Yellow and red barred.
46287. Black.	46293. Freckled, brown.

¹ See footnote on page 19.

46294. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ. Katinga.
(*Murraya caloxylon* Ridley.)

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill. Received June 25, 1918.

"A short time ago I received two fruits of this species from Mr. Burkill in Singapore. I am sending you seeds from one of these fruits and I trust that they may reach you in a viable condition." (Merrill.)

A medium-sized tree with pale flaky bark, native to Siam. The compound leaves are made up of 13 oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citronlike fruits, 4 inches in diameter, with a thick skin and green, tasteless flesh. The tree is known as the *katinga* and is famous in the Malay region for its beautiful wood, which is of a light-yellow color with dark-brown streaks. It is fairly hard and takes a good polish. (Adapted from the *Journal of the States Branch, Royal Asiatic Society*, vol. 50, p. 113.)

46295. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. Ragi millet.

From Beira, Mozambique. Presented by Mr. William Humphreys, acting director of agriculture. Received June 25, 1918.

"Ragi millet is the only variety grown in this territory. It is grown only by natives for food purposes and, with the exception of pearl millet (*Pennisetum glaucum*), is practically the only millet grown here." (Humphreys.)

46296. CHENOPODIUM AMBROSIODES L. Chenopodiaceæ.

From Rio Grande, Brazil. Purchased from Mr. Samuel T. Lee, American consul. Received June 28, 1918.

Known in Brazil as "herva de Santa Maria" or "Mastruz." A viscid-glandular, rank-smelling, perennial herb, native to tropical America, but widely naturalized and growing abundantly in North America, especially in the eastern United States, as a coarse weed of the roadside and waste places. Its medicinal importance is due to the volatile oil which it contains. A very active anthelmintic is obtained when the bruised fruit or the expressed juice of the plant is used. It is frequently employed for the expulsion of lumbricoid worms, especially in children. (Adapted from *The National Dispensatory*, p. 402.)

See S. P. I. No. 45610 for previous introduction.

46297. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Division of Plant Breeding, Department of Agriculture. Received June 28, 1918.

"We received this variety from the Belgian Kongo in 1914 under the name of *Nsombo B*. The imported seeds were taken from one seed bearer. The plants grown from these seeds were planted in May, 1915, on a rubber estate, where no other oil palms were near, so that they could only fertilize each other. They are now commencing to bear fruit. We can not yet determine the value of the new variety from a commercial point of view." (Cramer.)

46298. CAREX PENDULA Huds. Cyperaceæ. Sedge.
(*C. maxima* Scop.)

Grown at the Plant Introduction Field Station, Chico, Calif., from seed received from Dr. A. Robertson Proschowsky, Nice, France. Numbered for convenience in recording distribution.

"This is an evergreen plant and an interesting one. It has very attractive deep-green leaves 1 to 2 feet long and 1½ to 2 inches wide." (*Proschowsky*.)

46299. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received June 28, 1918.

"Seeds from a young tree in my garden. It is the first time this species has flowered. The seeds are surrounded by a juicy, red-colored aril which is edible and of a pleasant sweet taste, only it is very small. If my young tree should flower again and produce seed, I shall, of course, be pleased to send more. It is an ornamental plant, like so many tropical evergreens, and absolutely hardy here. As I stated in my former letter, it may serve eventually as stock on which to graft *Nephelium longanum* or *Litchi chinensis*." (*Proschowsky*.)

For previous introduction, see S. P. I. No. 44520.

46300. ATTALEA sp. Phœnicaceæ. **Coquito palm.**

From the City of Mexico, Mexico. Presented by Mr. A. L. Herrera. Received June 5, 1918.

"An undescribed species, closely related to the cohune or corozo palm (*Attalea cohune*) of the Caribbean coast region of Central America; it differs from the cohune palm in the smaller and more rounded fruits and the thinner and more brittle shell of the seed. The seed contains a single kernel, smaller than that of the cohune palm. The kernels contain a high percentage of oil, said to be the equal of coconut oil, and suitable for the manufacture of similar products. The palm is said to grow in great abundance in the vicinity of Mazatlan, Sinloa. The kernels are exported in considerable quantities from Mazatlan to Pacific ports of the United States for oil extraction." (*C. B. Doyle*.)

46301. ACROCOMIA TOTAI Mart. Phœnicaceæ. **Palm.**

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

A small palm, rarely over 1 meter (39 inches) in height, with fruit clustered at the base.

For previous introduction, see S. P. I. No. 45483.

46302. RICINUS COMMUNIS L. Euphorbiaceæ. **Castor-bean.**

From Asuncion, Paraguay. Presented by Mr. Henry H. Balch, American consul. Received June 19, 1918.

Large black seed with a few light-gray markings. Introduced for experiments to determine the oil content of different varieties of castor-beans.

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Issued May 5, 1922

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED
BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO SEPTEMBER 30, 1918.

(No. 56; Nos. 46303 to 46587.)



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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge*.

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Gardens*.
B. T. Galloway, *Plant Pathologist, Special Research Projects*.
Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service*.
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H. C. Skeels, *Botanist, in Charge of Collections*.
G. P. Van Eseltine, *Assistant Botanist, in Charge of Publications*.
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C. C. Thomas, *Assistant Plant Introducer, in Charge of Jujube Investigations*.
E. L. Crandall, *Assistant, in Charge of Photographic Laboratory*.
P. G. Russell and Patty Newbold, *Scientific Assistants*.
David A. Bisset, *Superintendent, Bell Plant Introduction Garden, Glenn Dale, Md.*
Edward Goucher, *Plant Propagator*.
J. E. Morrow, *Superintendent, Plant Introduction Garden, Chico, Calif.*
Henry Klopfer, *Plant Propagator*.
Edward Simmonds, *Superintendent, Plant Introduction Garden, Miami, Fla.*
Charles H. Steffani, *Plant Propagator*.
Henry E. Juenemann, *Superintendent, Plant Introduction Garden, Bellingham, Wash.*
Wilbur A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*
E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*
Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartless, *Scharunpur India*; Barbour Lathrop, *Chicago, Ill.*; Dr. H. L. Lyon, *Honolulu, Hawaii*; Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Little River, Fla.*; Dr. L. Trabut, *Algiers, Algeria*; E. H. Wilson, *Jamaica Plain, Mass.*; E. W. D. Holway, *Faribault, Minn.*; Dr. William Trelease, *Urbana, Ill.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JULY 1 TO SEPTEMBER 30, 1918 (NO. 56; NOS. 46303 TO 46587).

INTRODUCTORY STATEMENT.

Although this inventory is a small one and falls within the period affected by the war, it describes an unusual number of interesting plant immigrants, which, if they succeed, can scarcely fail to make a lasting impression on our horticulture.

No. 46310 (*Amaranthus paniculatus*) is the "huauhtli" of the Aztecs, an amaranth whose seeds are used in the making of a delicate sweetmeat resembling pop-corn balls. This "huauhtli" was cultivated by the Aztecs before the discovery of America. It figured in their religious ceremonies and their commerce. Quantities of this "grain" were exacted by them as tribute from conquered tribes. Dr. Safford has found that Montezuma had 18 granaries, each with a capacity of 9,000 bushels, filled with its seeds. The flour, made into small cakes called alegría by the Spaniards, was eaten in large quantities by the lower classes. The ability of this plant to grow and bear in regions too dry for corn makes it worthy of close study.

Some one in the Southwest should experiment with the "huauhtzontli" (*Chenopodium nuttalliae*; No. 46311) and determine whether its delicate inflorescences when cooked as the Mexicans cook them are not worth putting on our menu. A new vegetable such as this should be most interesting for experiment.

Canna edulis (No. 46313), the edible canna or Queensland arrowroot, has been grown for years for arrowroot production in Queensland, because there it yields heavily and is easier to cultivate than the Bermuda arrowroot (*Maranta arundinacea*). Few root vegetables are more brilliantly colored than the tubers of this canna, and its behavior in Florida makes it worthy of special study as a possible crop in the Everglades.

In Nos. 46316 to 46320 we have a collection of strikingly ornamental trees and shrubs from New Zealand, sent in by our correspondent, Mr. H. R. Wright. *Freycinetia banksii* (No. 46317) with its striking fruit, *Meryta sinclairii* (No. 46318) with its immense leaves, *Pittosporum ralphii* (No. 46319) with bell-shaped, dark-crimson flowers, and *Sideroxylon costatum* (No. 46320), a handsome shade tree, should all find a place somewhere in America.

Mr. John Gossweiler has sent in from Loanda, Angola, a species of *Solanum* (*S. macrocarpon*; No. 46330) bearing fruits the size of an apple, and also a brilliant violet-purple flowered species of sesame (*Sesamum angolense*; No. 46332) that may possibly be used to advantage in the improvement of the oil-producing sesame, which has the defect of scattering its seeds, thus making mechanical harvesting impossible.

A red-fleshed pummelo (*Citrus grandis*; No. 46336) from Shenchowfu, which its sender, Mr. N. T. Johnson, says ripens two months earlier than other varieties, may prove valuable in Florida.

The collections of beans and closely allied plants, accessioned in this inventory, may be cited to show how the machinery of plant introduction works when a plant breeder wants to get together as many varieties of a certain plant as possible for experimental purposes. Nos. 46338 to 46354, from Guayaquil, Ecuador; Nos. 46358 to 46373, from Caracas, Venezuela; Nos. 46490 to 46499, from Rosario, Argentina; Nos. 46502 to 46521, from Para, Brazil; and Nos. 46525 to 46530, from Punta Arenas, Chile, will put in his hands a total of 63 probable strains, including, of course, some duplicates.

Whether or not there would be any distinct advantages to truck growers in grafting eggplants on the root of the susumber (*Solanum mammosum*), which is closely related to it, remains to be shown. The idea is interesting, and seeds of the tree have been obtained (No. 46374).

The white sapote, which is much hardier than the avocado, is gradually winning adherents, at least the large-fruited varieties of it. A new one from Guadalajara (*Casimiroa edulis*; No. 46375), with pear-shaped fruits, is welcome, and Mr. Furnivall may have sent a sort superior to any we now have.

The large-fruited Mexican oaks (*Quercus* sp.; No. 46383) are so strikingly interesting that it is to be hoped they will withstand our winters in the South and, like *Lithocarpus cornea* from Hongkong, will find a congenial home along the Gulf coast.

Could the kauri pine (*Dammara australis*; No. 46387), stateliest of all the giant forest trees of the world because of its perfectly columnar trunk, be grown anywhere in the western hemisphere, it ought to be, for disquieting stories of its threatened extinction in New Zealand are rife. We are protecting our redwoods and sequoias, and

it is to be presumed, of course, that New Zealand, too, will safeguard her wonderful trees from extinction.

It is so seldom that a tree from Madagascar comes to this country that the arrival of the *Aphloia* (*A. theaeformis*; No. 46389) is worthy of special mention. This is said to be a low tree found on mountain slopes and when in fruit it is covered with small white wholesome berries.

Nos. 46390 to 46456 record as names only a collection of seeds found by the American consul in Explorer Frank N. Meyer's baggage which was taken off the steamer in China from which he disappeared. No descriptions were attached, and it is evident he had planned to write these up when he reached a region more congenial than was Ichang, from which he had just escaped.

The perennial vetch (*Swainsona* sp.; No. 46457) sent in by Mr. Hamilton, which thrives in porous soils in semitropical regions and holds its own among the native grasses, will attract at once the attention of citrus growers as a promising cover crop for Florida orchards.

Macadamia youngiana (No. 46463), with thin-shelled nuts, if it grows as well in Florida and Hawaii as its relative *M. ternifolia*, will be a valuable nut tree for the Subtropics. The behavior of the macadamia in southern Florida has already begun to attract the attention of nut growers.

South African shrubs grow so well in southern Florida that the introduction of a new sweet-scented one (*Brabejum stellatifolium*; No. 46474), which also has edible fruits, is worthy of emphasis.

A citrus fruit which has a concentrated peach flavor might be useful in the ice-cream business. The bel fruit of India (*Belou marmelos*; Nos. 46477 and 46500) has enthusiastic admirers and may be worthy of serious study by our citrus growers.

Plants whose leaves or fruits are powerful fish poisons have been used by the natives of many countries. They always have an interest in that they may contain valuable new alkaloids. Mr. John Ogilvie has sent in five (Nos. 46482 to 46486) from British Guiana, three of which are still undetermined.

The search for a blight-proof pear has interested many people, and when eight trees of a different habit from the rest remain unattacked by the disease in a badly blighted orchard in Louisiana their bud wood should be tested further to find out whether the variety remains free from blight (*Pyrus communis* \times *serotina*; No. 46566).

The fact that the "yang mei," a most attractive Chinese fruit tree, has fruited at Del Monte and that young trees of it are established at Chico, Calif., and at Brooksville, Fla., make worthy of mention the introduction by Mr. Groff of this species (*Myrica rubra*; No. 46571) from Canton. Though it is a discouragingly slow grower,

the beauty of its fruits is so great that some enthusiast ought to devote his spare time for a score of years to its dissemination.

The neem tree of India (*Azadirachta indica*; No. 46573), which Mr. Lane sends, is related to the Chinaberry tree, but bears dark-purple fruits. It should interest foresters if it grows anything like as fast as its relative, for its wood is reported to resemble mahogany. Its fruits furnish a medicinal oil and its sap is made into a cooling drink.

The New Zealand rimu (*Dacrydium cupressinum*; No. 46575), seeds of which Mr. Wright sends from Auckland, must be a most striking conifer, resembling, it would seem, a drooping yew, with beautiful red-cupped berries.

Nos. 46576 to 46586 describe eleven named varieties of oriental pears (*Pyrus* spp.) which were personally selected by Prof. F. C. Reimer, the pear expert of the Oregon Agricultural Experiment Station, during his recent exploration of eastern Asia. Should pear-blight ever stop the profitable culture of the European pear in America, these oriental varieties and the hybrids between them and the European forms would probably take their place. They are, therefore, of great interest and deserve the widest trial over the country.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 26, 1921.

INVENTORY.¹

46303. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Calcutta, India. Purchased from Mr. James A. Smith, American consul general. Received July 1, 1918.

"Seed of last season's crop from the economic botanist to the Government of India at Cawnpore. It is the best seed he could procure at this season of the year and is viable, but it is not pure and contains a mixture of United Provinces poppies." (*Smith.*)

Introduced for the experiments of the Office of Drug-Plant and Poisonous-Plant Investigations and not for general distribution.

46304 and 46305.

From Concepcion, Paraguay. Presented by Mr. Thomas R. Gwynn. Received July 1, 1918. Quoted notes by Mr. Gwynn.

46304. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"The Linconia butter bean is the very finest that I have ever come across. It yields in full blast for at least eight months and with a good season will give, in a climate like this, a year or more in superabundance continually, day after day. The plant is extraordinarily hardy and thrifty, as neither the extreme drought nor the hard frosts of last year put it out of business. When I pulled the plants on September 1 they were still bearing (not a great deal). I planted this year on September 15, and as we had a splendid year the plants are extra fine and are loaded with fruit of all sizes and flowers to the very tip ends. I have them planted along a wire fence with poles 12 feet high stuck in about 1 yard apart."

46305. PISUM SATIVUM L. Fabaceæ. Garden pea.

"Peas that are ready for the table inside of two months and are still bearing and in flower—now something over six weeks."

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by this office, and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants, and the forms of the names will be brought into harmony with recognized American codes of nomenclature.

46306. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Presented by the Department of Agriculture.
Received July 3, 1918.

For previous introduction and description, see S. P. I. No. 46204.

46307. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Carora, Venezuela. Presented by Mr. Julio Marmol Herrera. Received July 3, 1918.

Medium-sized, light-gray seed with reddish brown mottlings.

46308 and 46309. CHENOPODIUM AMBROSIOIDES L. Chenopodiaceæ.

From Buitenzorg, Java. Presented by the Botanic Garden. Received July 3, 1918.

The plant is an annual, but has an almost woody stem from 1 to 2 meters in height with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are very small and black. The whole plant has a pronounced aromatic odor. An infusion of this plant has been used in Europe with good results as a cure for nervous affections. (Adapted from the *Pharmaceutical Journal and Transactions*, 3d ser., vol. 9, p. 713.)

For previous introduction, see S. P. I. No. 45524.

46308. From Botanic Garden. 46309. From Kwala Lumpur.

46310 and 46311.

From Coyacan, Mexico. Presented by Mrs. Zelia Nuttall. Received July 3, 1918.

46310. AMARANTHUS PANICULATUS L. Amaranthaceæ. Huauhtli.

"Seeds of *Amaranthus paniculatus*, known as 'alegría.' Much used by Mexican Indians for making sweetmeats. They are first roasted, then mixed with sirup made of honey or of sugar and water, rolled into balls, and eaten like sugared pop corn." (Nuttall.)

An annual, with entire leaves, bearing the abundant grainlike edible seed in dense panicles. Some plants produce white seeds and some produce black. The white seeds are those chiefly used by the natives. This plant is found both in cultivation and growing wild. The seeds are ground and cooked in the form of small cakes known as *alegría*, these cakes being eaten in large quantities by the poorer classes, especially during a time of scarcity of corn. *Huauhtli* was cultivated by the Aztecs before the discovery of America. It occupied an important place in the fare of the people, and accounts show that every year 18 granaries, each with a capacity of 9,000 bushels, were filled by Montezuma. Often the tribute exacted by the Aztecs from the people they conquered would take the form of a certain quantity of this grain. It was so closely connected with the life of the people that it figured in religious observances. Spanish historians, writing in the first half of the seventeenth century, give accounts of how the ancient Mexicans made figures of their gods out of the flour obtained from the seed. The figures were carried in processions, and at the end of the ceremony they were broken up and served to the people as a form of communion. (Adapted from Safford, *A Forgotten Cereal of Ancient America, Proceedings of the Nineteenth International Congress of Americanists*, p. 286, 1917.)

46310 to 46311—Continued.

Huahtzontli.

46311. *CHENOPODIUM NUTTALLIAE* Safford. Chenopodiaceæ.

"Seeds of 'huahtzontli,' the unripe inflorescence of which is a favorite vegetable of the Mexican Indians. It is boiled or fried in butter, stem and all, small flowering tips being selected and tied together. Much used in Lent. Is very nourishing and palatable. The seeds must be soaked in milk (like corn, half ripe)." (*Nuttall.*)

"Native name *xochihuahtli* (flowering huahtli). A plant cultivated near the City of Mexico for the sake of its prolific branching inflorescences, which are gathered before they are quite mature and while the seeds are still soft and cooked as a vegetable with other ingredients. This variety, with yellowish or pale-brown discoid seeds, is the most popular. The inflorescences are known by the Atzec name *huahtzontli*, signifying 'huahtli-heads.' Botanically, the plant is closely allied to *Chenopodium paganum* Reichenb. and *C. album* L. It is quite distinct from *C. quinoa* Willd., the celebrated food staple of the Peruvian highlands; and it must not be confused with the plant called *michihuahtli* (fish-egg huahtli), which is a white-seeded *Amaranthus*, not a *Chenopodium*." (*W. E. Safford.*)

46312. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

From Vereeniging, South Africa. Presented by Mr. J. Burt Davy. Received August 14, 1918.

A small lot of mixed varieties of cowpeas introduced for experimental purposes.

46313. *CANNA EDULIS* Ker. Cannaceæ. Edible canna.

From Honolulu, Hawaii. Tubers presented by Mr. J. M. Westgate, Hawaii Agricultural Experiment Station. Received July 9, 1918.

In Queensland the edible canna, or "Queensland arrowroot," as it is called there, has been cultivated for years because its heavy yields and easy cultivation have made it more profitable than the Bermuda arrowroot, *Maranta arundinacea*. The stems and leaves are used for forage, and the tuber makes a palatable vegetable when cooked, somewhat resembling the turnip.

46314. *ZEA MAYS* L. Poaceæ. Corn.

From Guadalajara, Mexico. Presented by Arnulfo Ballesteros, La Barca, Jalisco, Mexico, at the request of Mr. John R. Silliman, American consul. Received July 10, 1918.

"Early Pipitillo corn which is cultivated in the swampy lands of Chapala. This corn is early in this region only when sown in the months of January, February, and the early part of March. It is then possible for the harvesting and drying to be completed four months afterward. Sown in May or June, the time required for it to mature is six months." (*Ballesteros.*)

46315. *PAPAVER SOMNIFERUM* L. Papaveraceæ. Poppy.

From Yokohama, Japan. Presented by the Yokohama Nursery Co. Received July 10, 1918.

"Variety *album*. An erect annual with handsome white flowers, which is cultivated in the Orient for opium manufacture. It was introduced into the

United States for the use of its palatable seeds in confectionery and the preparation of morphia for medicinal purposes. The seeds yield a comestible oil. It is of comparatively easy culture." (*S. C. Stuntz.*)

46316 to 46320.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 12, 1918.

46316. CLIANTHUS PUNICEUS (Don) Soland. Fabaceæ. Parrot's-bill.

A white-flowered form of the *kowhai*, which in its scarlet-flowered form is one of the most gorgeous of New Zealand flowering plants. With its flowers 2 inches in length in long pendulous racemes and its heavy, dark-green, glossy, pinnate leaves, it should prove a desirable addition to the drooping shrubs suitable for growing in regions having but slight frosts. The flowers of this plant in its native haunts are said to be pollinated by birds. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 210.)

For previous introduction, see S. P. I. No. 34716.

46317. FREYCINETIA BANKSII A. Cunn. Pandanaceæ.

"The fruit proper does not ripen until many months after the ripening of the white bracts. In size and shape it is almost identical with the *Monstera deliciosa*." (*Wright.*)

A vine which climbs to the tops of the tallest trees along the banks of rivers in the North Island of New Zealand. The linear-lanceolate leaves are borne in clusters along the stem, and the flowers appear in the center of these leaf clusters. It is called *Lon marrar* by the natives, who eat the white fleshy bracts of the flowers for their sugary juice. (Adapted from *Hooker, Companion to the Botanical Magazine*, vol. 2, p. 377.)

46318. MERYTA SINCLAIRII (Hook. f.) Seem. Araliaceæ.

"It makes a beautiful tree with immense leaves; an ideal specimen for a lawn, but very tender to frost." (*Wright.*)

A handsome New Zealand tree, 12 to 24 feet high, with glossy leaves 20 inches long and 10 inches wide. The erect panicles of greenish yellow flowers are followed by oblong, shining black fruits. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 312.)

46319. PITTOSPORUM RALPHII Kirk. Pittosporaceæ.

A laxly branched shrub 15 to 20 feet high, found in the central district of the North Island of New Zealand. The shoots, sepals, and under-surface of the coriaceous leaves are covered with close white hairs. The fascicles of small, bell-shaped, dark-crimson flowers, with protruding yellow anthers resting on the downy white young leaves, make it a very attractive ornamental shrub. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 195.)

46320. SIDEROXYLON COSTATUM (Endl.) F. Muell. Sapotaceæ.

A handsome, closely branched tree 40 feet high and 3 feet in diameter, native to the coasts of the North Island and of Norfolk Island in New Zealand. The obovate, entire leaves, 2 to 4 inches long, are coriaceous and shining. The flowers are found one or two together in the axils of the leaves and the fruits are 1 inch in diameter with one to four seeds. The wood is hard, white, and durable, and the bony seeds were formerly used for necklaces. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 435.)

46321. CARICA sp. Papayaceæ.

From Tampico, Mexico. Presented by Mr. Harry Hummel. Received July 13, 1918.

"*Papaya broncha*. This is the everblooming papaya; it produces a fruit about 3 inches long and 2 inches in diameter. The trees grow wild in the woods, can be transplanted at any time of the year, require no attention except water, and I believe if cultivated will produce a larger fruit." (*Hummel*.)

46322 to 46328.

From Rio Grande, Brazil. Obtained by Mr. Samuel T. Lee, American consul. Received July 13, 1918.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American beanlike plants, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46322 to 46326. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46322. *Feijão carico.* **46325.** *Feijão da praia.*

46323. *Feijão tupi.* **46326.** *Feijão preto.*

46324. *Feijão branco.*

46327 and 46328. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

46327. *Feijão mindo branco.* **46328.** *Feijão mindo oscuro.*

46329 to 46332.

From Loanda, Angola, Africa. Presented by Mr. John Gossweiler, Department of Agriculture. Received July 16, 1918.

46329. RAPHIA GAERTNERI Mann and Wendl. Phœnicaceæ.

A tropical African palm with a simple erect stem and a crown of pinnately compound leaves made up of linear-lanceolate, acuminate segments with the margins recurved at the base. The scaly chestnut-brown fruits, 2 to 3 inches long, are borne in pendent clusters. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 8, p. 105.*)

46330. SOLANUM MACROCARPON L. Solanaceæ.

A stout undershrub with a much-branched smooth stem and ovate, sinuate-margined leaves 8 inches long. The racemose cymes, opposite the leaves, bear blue-purple flowers, 1 to 2 inches broad, which are followed by globose, yellow fruits the size of an apple. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 214.*)

46331. GLADIOLUS sp. Iridaceæ. Gladiolus.

Received without description.

46332. SESAMUM ANGOLENSE Welw. Pedaliaceæ.

An erect herb, often 8 feet high, native to tropical Africa. The square stems are clothed with numerous oblong to ovate wavy margined leaves 2 to 4 inches long. The solitary, axillary flowers have brilliant violet-purple, obliquely campanulate corollas, 2 to 3 inches long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 555.*)

46333. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

From Colombia. Presented by Mr. Hernando Villa, Girardot. Received July 16, 1918.

Seed five-eighths of an inch long and three-eighths of an inch wide; light-gray ground with stripes and blotches of reddish brown. Introduced for experiments to determine the oil content of different varieties of castor-beans.

46334. CARICA PAPAYA L. Papayaceæ. Papaya.

From Tampico, Mexico. Presented by Mr. Harry Hummel. Received July 16, 1918.

"*Papaya real*. The fruit from which these seeds were taken was 14 inches long and 6 inches in diameter. It is the very best papaya that grows in the Tampico district and is a delicious fruit equal to any muskmelon. The trees grow in sandy loam in a climate which very seldom goes below 40° F. and reaches as high as 110°." (*Hummel*.)

46335. VIROLA sp. Myristicaceæ.

From Rio de Janeiro, Brazil. Presented by Mr. R. P. Momsen, American vice consul. Received July 17, 1918.

"*Bicuhyba* nut. A common ornamental and timber tree of large size, with brown, medium-hard wood, well known on the Brazilian market. The seed is said to yield an oil used in medicine and for soap making." (*H. M. Curran*.)

For previous introduction, see S. P. I. No. 41945.

46336. CITRUS GRANDIS (L.) Osbeck. Rutaceæ. Pummelo.
(*C. decumana* Murray.)

From Shenchowfu, Hunan, China. Presented by Mr. N. T. Johnson, American consul at Changsha, who received them from Rev. J. F. Bucher. Received July 24, 1918.

"Red-fleshed pummelo. Ripens earliest of any pummelos on our compound. Is at least two months earlier than other varieties." (*Bucher*.)

46337. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

Plants grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in recording distribution.

Gottfried variety. A Mexican avocado which has proved quite frost resistant. This variety is a seedling grown from seed received under S. P. I. No. 19094. The fruit ripens at Miami during the months of August, September, and October. It is pear shaped and of a purplish maroon color; weighs 11 to 12 ounces and is of fair quality.

46338 to 46354.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received July 24, 1918. Descriptive notes by Dr. Goding.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants which bear beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46338 to 46354—Continued.

46338. LENTILLA LENS (L.) W. F. Wight. Fabaceæ. **Lentil.**
(*Lens esculenta* Moench.)

"Peas, Lentejas."

46339. PHASEOLUS LUNATUS L. Fabaceæ. **Lima bean.**

"Beans, Pallares."

46340 to 46351. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

46340. "*Bayo*."

46346. "*Misturiado*."

46341. "*Burro*."

46347. "*Panamito reforzado*."

46342. "*Panamito*."

46348. "*Burro amarillo*."

46343. "*Canario*."

46349. "*Caballero*."

46344. "*Criollo*."

46350. "*Chalos*."

46345. "*Overo*."

46351. "*Cacique*."

46352. PISUM SATIVUM L. Fabaceæ. **Garden pea.**

"*Alberjas*."

46353. VICIA FABA L. Fabaceæ. **Broad bean.**

"*Habas*."

46354. VIGNA SINENSIS (Torner) Savi. Fabaceæ. **Cowpea.**

"*Fumbes*."

46355 to 46357.

From Richmond, Australia. Presented by Mr. F. H. Baker. Received July 24, 1918.

46355. ACACIA DIFFUSA Lindl. Mimosaceæ.

A straggling shrub, native to New South Wales, with loosely scattered sessile, linear leaves about an inch long and yellow flowers in axillary heads about the size of a pea. (Adapted from *The Botanical Register*, vol. 8, pl. 634.)

For previous introduction, see S. P. I. No. 44320.

46356. ACACIA JUNIPERINA Willd. Mimosaceæ. **Prickly wattle.**

"The common prickly wattle of the coastal and mountain districts. A prickly scrambling shrub, usually with white or cream-colored flowers. Very common in New South Wales." (*Maiden, Wattles and Wattlebarks*, 3d ed., p. 77.)

46357. HAKEA ROSTRATA F. Muell. Proteaceæ.

An erect shrub several feet in height with glabrous branches. The terete leaves are smooth and rigid. The flowers are borne in sessile axillary clusters. The rugose fruit is 1 to 2 inches long by three-fourths of an inch broad, recurved at the base, incurved from the middle, with a closely inflexed conical beak. Found in Victoria and southern Australia. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 508.)

For previous introduction, see S. P. I. No. 45868.

46358 to 46373.

From Caracas, Venezuela. Presented by Mr. H. Pittier, through Mr. Homer Brett, American consul, La Guaira. Received July 24, 1918. Quoted notes by Mr. Pittier.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants which bear beanlike

seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46358. *DOLICHOS LABLAB* L. Fabaceæ.

Bonavist bean.

"No. 14. *Frijol tapiruense*."

46359 to 46361. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

46359. "No. 9. *Guaracaro blanco*."

46360. "No. 11. *Guaracaro cafe con leche*."

46361. "No. 15. *Guaracaro peine*."

46362 to 46370. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

46362. "No. 7. *Poncha rosada*."

46363. "No. 6. *Caraota blanca*."

46364. "No. 5. *Huevo de paloma*."

46365. "No. 3. *Guaracaro redondo pintado*."

46366. "No. 8. *Caraota negra*."

46367. "No. 16. *Poncha rosada jaspeada*."

46368. "No. 1. *Guacamaya*."

46369. "No. 13. *Caraota indiecita pequena*."

46370. "No. 12. *Guaracaro colorado*."

46371 to 46373. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

46371. "No. 10. *Frijol colorado*."

46372. "No. 2. *Frijol blanco de sopa*."

46373. "No. 4. *Frijol bayo*."

46374. *SOLANUM MAMMOSUM* L. Solanaceæ.

Susumber.

From Porto Rico. Presented by Prof. C. S. Sargent, Arnold Arboretum, Jamaica Plain, Mass. Collected by Mr. Sylvester Baxter. Received July 25, 1918.

"In Jamaica difficulties in bringing eggplants to a healthy maturity have been met by grafting them on *Solanum mammosum*, the so-called 'susumber tree,' a rank, tropical weed, closely related botanically to the eggplant. The grafts are said to produce fruits of large size and fine flavor, and as the stock is perennial bearing is continual." (*Cook and Collins, Economic Plants of Porto Rico, Contributions from the U. S. National Herbarium, vol. 8, p. 242.*)

For previous introduction, see S. P. I. No. 27713.

46375. *CASIMIROA EDULIS* La Llave. Rutaceæ.

White sapote.

From Guadalajara, Mexico. Presented by Mr. F. S. Furnivall, through Mr. J. R. Silliman, American consul. Received July 26, 1918.

"A pear-shaped variety of the white sapote. The fruits were healthy, of good size, ripe, and of a bright-yellow color." (*Furnivall.*)

For previous introduction and description, see S. P. I. No. 39583.

For an illustration of the white sapote tree, see Plate I.

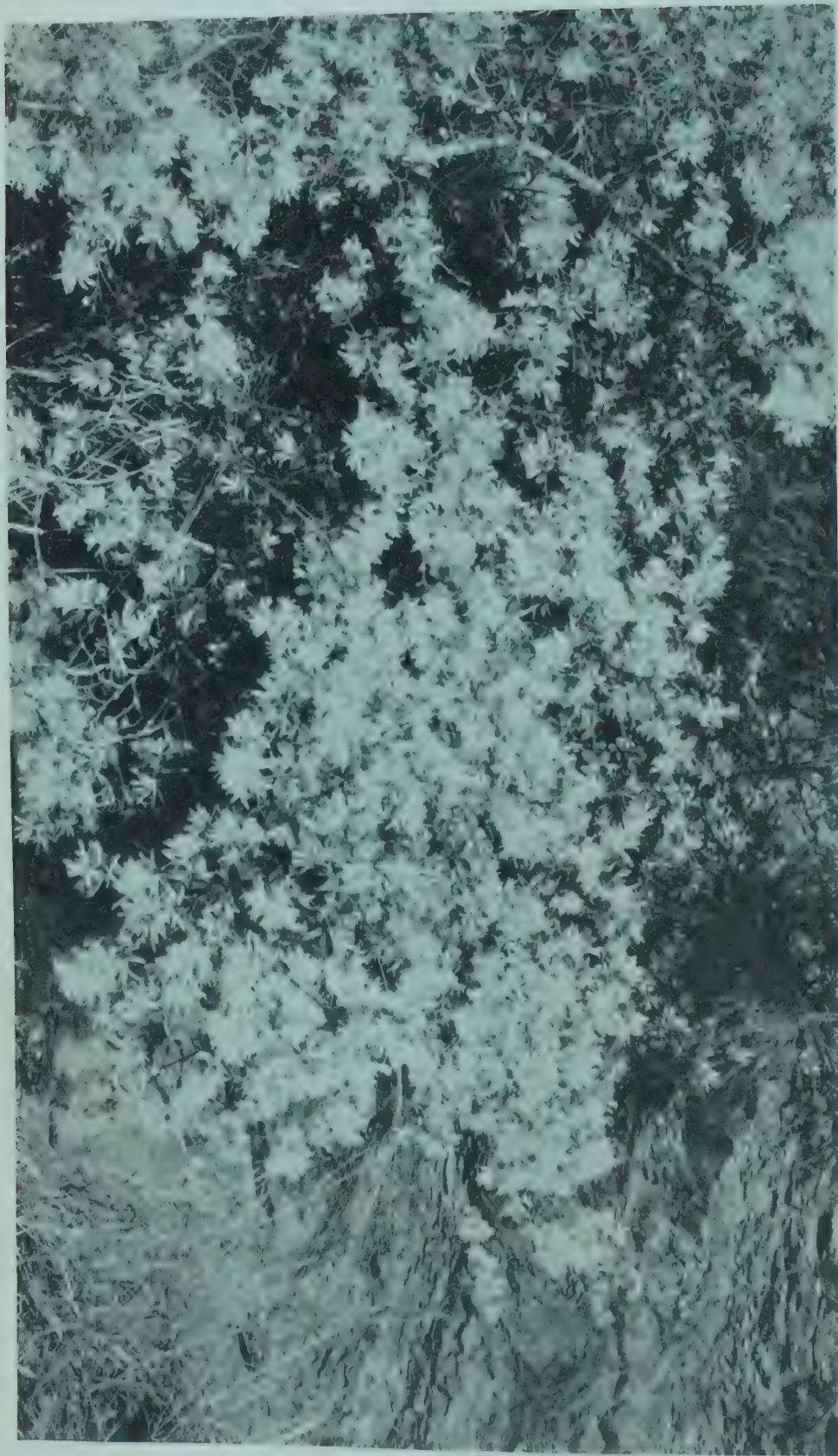
46376 and 46377. *BAROSMA* spp. Rutaceæ.

From Transvaal, South Africa. Presented by Mr. J. F. Jewell, American consul at Lourenco Marques, Portuguese East Africa, who obtained them from the Director of Agriculture, through the Division of Botany, Transvaal Department of Agriculture, Pretoria. Received July 29, 1918.



THE WHITE SAPOTE, AS IT GROWS IN COSTA RICA. (*CASIMIROA EDULIS*
LA LLAVE, S. P. I. No. 46375.)

This fruit-bearing tree is commonly cultivated in Mexico and Central America, being particularly esteemed by the inhabitants of Mexico. In recent years it has been grown in California and Florida, where it succeeds admirably. There is much difference among seedling trees in the character of their fruit; that of some is excellent, while that of others is of mawkish or even bitter flavor. Superior varieties are now being propagated by budding or grafting. (Photographed by Wilson Popenoe, Cartago, Costa Rica, May 29, 1920; P17854FS.)



THE CHUCK MEI, AN ORNAMENTAL CHINESE SHRUB FOR THE SOUTH. (LOROPETALUM CHINENSE (R. BR.) OLIVER,
S. P. I. No. 46424.)

This small shrub related to the witch-hazel was found by Mr. Meyer growing in rather sterile soil among the rocks and even in open pine forests in Hupeh Province, China. It is called by the Chinese the *chuck mei*. The white flowers, which literally cover the bushes very early in spring, make them look like banks of snow at a distance. There is considerable variation in the whiteness of the flowers, however, ranging from pure white to greenish white. (Photographed by F. N. Meyer, near Miaochien, Hupeh, China, April 14, 1917; P12421FS.)

46376 and 46377—Continued.

46376. BAROSMA BETULINA (Thunb.) Bartl. and Wendl. **Buchu.**

A much-branched shrub with rodlike branches, found on the slopes of the Roodesand Mountains in South Africa. The opposite, cuneate-obovate leaves, about three-fourths of an inch long and half an inch wide, are sharply and closely denticulate on the margin. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 393.*)

This and the following species are two of the sources of the buchu leaves used in medicine.

46377. BAROSMA SERRATIFOLIA (Curt.) Willd. **Long-leaf buchu.**

An erect South African shrub with angular twigs bearing linear-lanceolate sharply serrulate leaves $1\frac{1}{2}$ inches long and one-fourth of an inch wide. This species has the same medicinal properties as *B. betulina*, but is said to contain less of the essential oil. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 393.*)

46378. CUCURBITA PEPO L. Cucurbitaceæ. Pumpkin.

From San Jose, Costa Rica. Presented by Sr. Carlos Volio, through Mr. C. Wercklé. Received July 29, 1918.

Seeds of an exceptionally valuable pumpkin introduced for experimental purposes.

46379 to 46381.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester. Received July 30, 1918. Quoted notes by Mr. Wester.

46379. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. **Ma-yuen.**
"Adlay. An edible variety."

46380. PARKIA TIMORIANA (DC.) Merr. Mimosaceæ. **Cupang.**
(*P. roxburghii* Don.)

A very large tree found in Timor and the Philippines, often 115 feet high, with a widespreading crown. The fernlike, bipinnate leaves are made up of a large number of very small leaflets. The small white and yellow flowers are borne in dense pear-shaped panicles, and the pendulous black pods are 18 inches long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 5, p. 2474.*)

46381. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.
"The *Lamao* Lima. Given the right conditions this variety is very prolific."

46382. AMPELODESMA BICOLOR (Poir.) Kunth. Poaceæ. **Grass.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received August 2, 1918.

A bunch grass with long tough leaves of possible use in paper making.

For previous introduction and description, see S. P. I. No. 33654.

46383. QUERCUS sp. Fagaceæ. Oak.

From Guatemala. Presented by Mr. E. Reeves, Finca el Tambor, San Felipe, Retalhuleu, at the request of Dr. William Trelease, of the University of Illinois. Received August 8, 1918.

"Fruits of a large-fruited oak that grows a few miles from here, and which Dr. Trelease has done me the honor to [name for me]." (Reeves.)

"I am glad that Mr. Reeves got to you viable seeds of his fine oak, which I thought you would like. It is between *Quercus corrugata* and *Q. cyclobalanoides* in characters, but very distinct from both. The name is a manuscript one as yet." (Trelease.)

46384. PANDOREA AUSTRALIS (R. Br.) Spach. Bignoniaceæ.
(*Tecoma australis* R. Br.)

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart. Received August 10, 1918.

"The most wonderful of all climbing plants grown on this coast. It is a rampant grower with dark, shining green foliage. When in bloom the flowers are as the sands of the sea, so abundant are they. The color is a light cream, spotted with chocolate, and the whole show is over in about two weeks." (Barnhart).

For previous introduction, see S. P. I. No. 44961.

46385. CALYDOREA SPECIOSA (Hook.) Herbert. Iridaceæ.

From Santiago, Chile. Presented by Dr. Carlos Camacho, director, Servicios de Policia Sanitaria Vegetal. Received August 14, 1918.

"Bulbs known in Chile as *lahui*. This plant is not cultivated and is found only in the hills of certain regions in the central and southern parts of the country." (Camacho.)

For previous introductions, see S. P. I. Nos. 30074, 30075, and 36134.

46386. MORINGA OLEIFERA Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)

From Managua, Nicaragua. Presented by the American Legation. Received August 14, 1918.

"A small tree, cultivated as an ornamental in Cuba, usually about 16 or 20 feet in height, erect, with compound leaves nearly a foot long. The white flowers are borne in panicles, and the slender pods are often a foot long." (Wilson Popenoe.)

For previous introduction, see S. P. I. No. 40913.

46387 and 46388.

From Palmerston North, New Zealand. Presented by Mr. J. W. Poynton. Received July 26, 1918.

46387. DAMMARA AUSTRALIS Lambert. Pinaceæ. Kauri pine.
(*Agathis australis* Steud.)

This magnificent tree, native to New Zealand, sometimes measures 180 feet in height and 17 feet in diameter, the estimated age of such a tree being 700 to 800 years. It furnishes an excellent, straight-grained, remarkably durable timber which is much used in boat building, bridge building, wagon making, and for furniture. This tree also yields the kauri resin, from which an almost colorless varnish is made. (Adapted from Mueller, *Select Extra-Tropical Plants*, 9th ed., p. 161.)

46387 and 46388—Continued.

46388. PHORMIUM TENAX Forst. Liliaceæ. New Zealand flax.

"The yield is about 1 ton of fiber from 8 tons of green leaves. The nonfibrous part of the leaves, stripped from the fiber, has a lot of proteid material in it and some sugar and starch. Cattle eat the cut-up leaves greedily, and if the waste were dried it would probably make a good cattle feed. When decayed it makes an excellent fertilizer. Analyses have shown a high percentage of potassium salts in the ash."

1. "From plants cut two or three times."
2. "From plants not previously cut."
3. "From plants cut once only." (Poynton.)

46389. APHLOIA THIEAEFORMIS (Vahl) Bennett. Flacourtiaceæ.

From Tamatave, Madagascar. Presented by the Envoi de la Station Experimentale d'Agriculture du Gouvernement Ivoloïna. Received August 8, 1918.

A low tree found on the slopes of the mountains in Madagascar. The small white berries, which literally cover the tree, are edible and very wholesome, although slightly bitter. The leaves are said to possess medicinal virtues. (Adapted from Heckel, *Plantes Utiles de Madagascar*, p. 256.)

46390 to 46456.

From China. Collected by Mr. Frank N. Meyer, Agricultural Explorer for the Department of Agriculture. Received August 12, 1918.

"This is the last collection of plant material to be made by the late Frank N. Meyer, our agricultural explorer, who was drowned in the Yangtze River on June 1, 1918. The seeds were found in Mr. Meyer's baggage and forwarded from Shanghai by the American consul.

"In view of Mr. Meyer's usual practice of giving a careful description of every seed and plant which he sent in, it seems appropriate to explain that the reason these few last lots received must be published without notes is that Mr. Meyer evidently had not had time since their collection to arrange the notes to go with them. It is with the same sad reluctance which a traveler feels when he leaves his comrade buried somewhere along the route and pushes on that I write these few words regarding Mr. Meyer's last plant introductions into America." (David Fairchild.)

46390. AMERIMNON sp. Fabaceæ.

"Altitude 3,000 feet. Shrub 4 feet tall."

46391. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ, Peach.
(*Prunus davidiana* Franch.)46392 and 46393. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

"Chikungshan, Honan, China, August 7, 1917. Wild peaches. Altitude about 2,000 feet."

46394. ARALIA sp. Araliaceæ.

46395. ARALIA sp. Araliaceæ.

46396. ASPARAGUS sp. Convallariaceæ.

Asparagus.

46397. BEGONIA sp. Begoniaceæ.

Begonia.

46398. BERBERIS sp. Berberidaceæ.

Barberry.

46390 to 46456—Continued.

46399. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. Pai ts'ai.
46400. *BRASSICA PEKINENSIS* (Lour.) Gagu. Brassicaceæ. Pai ts'ai.
- “Yo pai ts'ai (oil white vegetable).”
46401. *BRASSICA* sp. Brassicaceæ.
- “Changyang, Hupeh, December 9, 1917. Ching ts'ai and peh' ts'ai mixed.”
46402. *BRASSICA* sp. Brassicaceæ.
- “Ta pai ts'ai.”
46403. *CAPSICUM ANNUUM* L. Solanaceæ. Pepper.
46404. *CARTHAMUS TINCTORIUS* L. Asteraceæ. Safflower.
- “Sample of hong hua, red flower seed; plant for coloring silk red.”
46405. *CLEMATIS* sp. Ranunculaceæ. Clematis.
46406. *CORYLUS TIBETICA* Batal. Betulaceæ.
46407. *COTONEASTER* sp. Malaceæ.
46408. *COTONEASTER* sp. Malaceæ.
46409. *COTONEASTER* sp. Malaceæ.
46410. *COTONEASTER* sp. Malaceæ.
46411. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. Hawthorn.
- “From Shinglungshan.”
46412. *CRATAEGUS PINNATIFIDA* Bunge. Malaceæ. Hawthorn.
46413. *CUCUMIS SATIVUS* L. Cucurbitaceæ. Cucumber.
46414. *DIOSPYROS LOTUS* L. Diospyraceæ. Persimmon.
46415. *EREMOCHLOA* sp. Poaceæ. Grass.
46416. *FAGOPYRUM VULGARE* Hill. Polygonaceæ. Buckwheat.
- (*F. esculentum* Moench.)
46417. *JUGLANS MANDSHURICA* Maxim. Juglandaceæ. Walnut.
46418. *KOELREUTERIA* sp. Sapindaceæ.
46419. *LILIUM* sp. Liliaceæ. Lily.
- “Near Suilokua, Hupeh, November 13, 1917. Altitude, 2,000 feet.”
46420. *LILIUM* sp. Liliaceæ. Lily.
- “Near Tsayanpoo. Altitude 5,300 feet. December 2, 1917.”
46421. *LILIUM* sp. Liliaceæ. Lily.
46422. *LILIUM* sp. Liliaceæ. Lily.
46423. *LILIUM* sp. Liliaceæ. Lily.
46424. *LOROPETALUM CHINENSE* (R. Br.) Oliver. Hamamelidaceæ.
- For an illustration of this shrub, as photographed by Mr. Meyer, see Plate II.
46425. *PALIURUS SPINA-CHRISTI* Mill. Rhamnaceæ.
46426. *PEUCEDANUM* sp. Apiaceæ.
46427. *PHASEOLUS CALCARATUS* Roxb. Fabaceæ. Rice bean.
- “Patung, China, December 5, 1917. *Man doh* (savage bean). Eaten in soups.”
46428. *PHYSALIS ALKEKENGII* L. Solanaceæ. Alkekengi.

46390 to 46456—Continued.

46429. *PISUM SATIVUM* L. Fabaceæ. Garden pea.
 "Changyang, Hupeh, December 9, 1917. *Wah doh*. A large variety eaten boiled, steamed, and roasted as human food. A winter crop."
46430. *POUPARTIA AXILLARIS* (Roxb.) King and Prain. Anacardiaceæ..
46431. *PRUNUS* sp. Amygdalaceæ. Plum.
46432. *PRUNUS* sp. Amygdalaceæ. Cherry.
46433. *PTEROCELTIS TATARINOWII* Maxim. Ulmaceæ.
46434. *PYRUS BETULAEFOLIA* Bunge. Malaceæ. Pear.
- 46435 to 46437. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.
46435. "Kingmen, Hupeh, October 10, 1917. An intermediate type between the cultivated form and the wild one."
46436. "2453a. Kingmen, Hupeh, October, 1917. *Yeh T'ang li*."
46437. (No descriptive note attached.)
46438. *PYRUS* sp. Malaceæ. Pear.
- "Mixed varieties from various localities."
46439. *QUERCUS* sp. Fagaceæ. Oak.
46440. *RHYNCHOSIA VOLUBILIS* Lour. Fabaceæ.
46441. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.
46442. *SACCHARUM ARUNDINACEUM* Retz. Poaceæ. Grass
- "Near Hsiao-chita, 5 miles northeast of Ichang, Hupeh. A grass growing from 3 to 10 feet tall, found in sandy and pebbly river beds, subject to annual overflow. A most excellent binder of loose sand for Columbia River regions."
46443. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
- Medium-sized, yellowish green seed.
46444. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
- Small, flat, black seed.
46445. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
- Small, round, yellow seed.
46446. *SOPHORA TOMENTOSA* L. Fabaceæ.
46447. *STILLINGIA SEBIFERA* (L.) Michx. Euphorbiaceæ. Tallow tree.
(Sapium sebiferum Roxb.)
46448. *STIZOLOBIUM DEERINGIANUM* Bort. Fabaceæ. Florida velvet bean.
 "For hilly land."
46449. *STIZOLOBIUM NIVEUM* (Roxb.) Kuntze. Fabaceæ. Lyon bean.
46450. *SYMPLOCOS* sp. Symplocaceæ.
46451. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.
(Cedrela sinensis Juss.)
46452. *TRACHYCARPUS EXCELSUS* (Thunb.) Wendl. Phœnicaceæ. Palm.
46453. *TRAPA NATANS* L. Trapaceæ. Water-chestnut.
46454. *VIBURNUM* sp. Caprifoliaceæ.
46455. *VIBURNUM* sp. Caprifoliaceæ.
46456. *VITIS* sp. Vitaceæ. Grape.
- "Tahungshan, August 23, 1917. Altitude, 4,000 feet. Medium-strong growth; leaves very woolly underneath."

46457. SWAINSONA sp. Fabaceæ.

From Tolga, Queensland, Australia. Presented by Mr. J. A. Hamilton.
Received August 14, 1918.

"Seeds of a perennial vetch. The plant seems very drought resistant, as it is green all the time. It holds its own among the native grasses and is green when they are dried up, so it must root very deeply. This ought to prove a valuable fodder crop in semitropical areas, especially in the drier parts. It grows in a very porous, well-drained soil." (*Hamilton.*)

46458 to 46464.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received August 16, 1918. Quoted notes by Mr. Harrison.

46458. DIANELLA sp. Liliaceæ.

"A native lily growing on the beach here, with insignificant purple flowers and berries. Stock eat the foliage."

46459. HIBISCUS sp. Malvaceæ.

"A native hibiscus growing on the coast here. Height 10 to 12 feet. Yellow flowers with purple center. Large leathery foliage which is eaten by stock. It requires a few years to grow from seed to flower."

46460. IPOMOEA sp. Convolvulaceæ.

"Native Ipomoea with large purple flowers and handsome lacinated foliage. Would make a good ornamental. A perennial vine with tuberous root."

46461. ISCHAEMUM TRITICEUM R. Br. Poaceæ.

"Giant Ischaemum, growing to the length of several feet."

46462. PANICUM PARVIFLORUM R. Br. Poaceæ.

"Height 3 to 4 feet. A very heavy yielder; nutritious and relished by stock. One of our best native grasses."

46463. MACADAMIA YOUNGIANA F. Muell. Proteaceæ. Macadamia.

"The thin-shelled Queensland nut. Very rare here."

A shrub 8 to 10 feet high with oblong leaves in whorls of three or four and with nuts resembling those of *M. ternifolia*, but with thinner shells. (Adapted from *Bentham, Flora Australiensis, vol. 5, p. 406.*)

46464. NYMPHAEA GIGANTEA Hook. Nymphaeaceæ. Water lily.

"The large, beautiful blue water lily of the northern rivers of New South Wales."

46465 to 46472.

From Rio Grande, Brazil. Presented by Mr. Samuel T. Lee, American consul. Received August 17, 1918. Quoted notes by Mr. Lee.

These legumes have been introduced for use in a series of experiments in testing and breeding plants which bear beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46465 to 46470. PHASEOLUS VULGARIS L. Fabaceæ. Common bean.

46465. "*Feijão branco* (white)."

46466. "*Feijão enxofre* (sulphur)."

46467. "*Feijão mulatinho*."

46468. "*Feijão manteiga* (butter)."

46469. "*Feijão mulata gorda*."

46470. "*Feijão preto* (black)."

46471 and 46472. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

46471. "*Feijão fradinho*." 46472. "*Feijão macaca*."

46473. *PRUNUS MUME* Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

From Yuba City, Calif. Presented by Mrs. J. H. Barr. Received August 22, 1918.

"Seeds from a tree of the so-called plumcot. Since this species has shown promise as a stock resistant to crown-gall, the seeds from this plumcot are to be distributed for testing for resistance to this disease." (*David Fairchild*.)

46474. *BRABEJUM STELLATIFOLIUM* L. Proteaceæ.

From Pretoria, South Africa. Presented by Mr. I. B. Pole Evans, Division of Botany, Department of Agriculture. Received August 22, 1918.

A shrub or small tree 8 to 10 feet high, found in the western part of South Africa. The purplish twigs bear lanceolate, serrate, coriaceous leaves in whorls of six. The white sweet-scented flowers are borne in dense axillary racemes 3 to 6 inches long and are followed by ovoid, densely velvety fruits 1 to 2 inches long, each containing a single seed. The seed may be eaten after prolonged soaking in water. The red reticulated wood is used for joiners' and turners' ornamental work. (Adapted from *Thiselton-Dyer, Flora Capensis*, vol. 5, p. 504.)

46475. *BRASSICA OLERACEA VIRIDIS* L. Brassicaceæ

Jersey tree kale.

From St. John, Jersey, Channel Islands, England. Presented by Mr. D. R. Bisson. Received August 24, 1918.

"In this section Jersey kale is sown at the end of summer, then transplanted to 2 to 3 feet apart about November. It must be protected to stand severe frost. Its stalk attains a height of 8 to 12 feet. The leaves of the growing plant are used for feeding cattle and pigs." (*Bisson*.)

For previous introduction, see S. P. I. No. 44829.

46476. *ORYZA SATIVA* L. Poaceæ.

Rice.

From Acapulco, Mexico. Presented by Mr. John A. Gamon, American consul. Received August 29, 1918.

"Purple rice (arroz morado). From the neighborhood of Tecpan, State of Guerrero." (*Gamon*.)

Introduced for the variety tests being carried on by the Office of Cereal Investigations and for trial by other cooperators.

46477. *BELOU MARMELLOS* (L.) Lyons. Rutaceæ.

Bel.

(*Aegle marmelos* Correa.)

From Shahjehanpur, India. Presented by Mr. N. L. Rockey, district superintendent, Methodist Episcopal Church. Received September 3, 1918.

"The bel fruit grows plentifully in India. It is prized as a fruit from which to make sherbet. Some of the fruits are very fine; others are useless. It has the flavor of concentrated peaches. The fruit is extremely valuable in the treatment of dysentery, as it is a mild astringent. At the same time it is a food." (*Rockey*.)

46478 and 46479.

From Calcutta, India. Presented by Mr. Humphrey G. Carter, economic botanist, Indian Museum. Received July 1, 1918. Quoted notes by Mr. Carter.

"From Hsipaw in the Shan States in the north of Burma, I have received a packet of mixed seeds."

46478. *BRASSICA CHINENSIS* Jusl. Brassicaceæ. **Mustard.**

"The seeds are extremely fine."

46479. *BRASSICA RUGOSA* (Roxb.) Prain. Brassicaceæ. **Mustard.**

"The seeds have a rugose testa."

46480 and 46481.

From Zacuapam, Mexico. Presented by Dr. C. A. Purpus. Received August 24, 1918. Quoted native names by Dr. Purpus.

46480. *CAJAN INDICUM* Spreng. Fabaceæ. **Pigeon-pea.**

"*Frijolito garbanzo.*"

"The pigeon-pea, or guandu, supposed to be a native of India, is cultivated widely for food in the Tropics and Subtropics. It is perennial in frostless regions, but is usually cultivated as an annual. The plant develops into a large, semiwoody bush reaching a height of 5 to 10 feet. Although the skin of the pigeon-pea is a little tough, the flavor is good." (*R. A. Young.*)

For previous introduction and fuller description, see S. P. I. No. 46050.

46481. *CRATAEGUS MEXICANA* Moc. and Sesse. Malaceæ. **Hawthorn.**

"*Tejocote.*"

A bushy tree 8 to 10 feet high, with oblong leaves and large, light-yellow fruits, native of the table-lands of Mexico.

For previous introduction and description, see S. P. I. No. 45818.

46482 to 46486.

From British Guiana. Presented by Mr. John Ogilvie. Rupununy River. Received August 27, 1918. Quoted notes by Mr. Ogilvie.

South American shrubs used as fish poisons.

46482. *SESBAN* sp. Fabaceæ.

"No. 1. *Hairry* or *Ai*. A small shrub planted by natives around their houses or in the fields. It grows easily and matures quickly. The leaves and small twigs are pounded and thrown into the pool."

46483. (Undetermined.)

"No. 2. A shrub planted as above. The leaves and fruits are picked while green and rubbed to a pulp on a grater, then mixed with grated roots of the bitter or poisonous cassava. It keeps if not allowed to mildew. Pellets the size of a marble are thrown into the creek."

46484. (Undetermined.)

"No. 3. Found wild in the forest and grows rapidly on old abandoned clearings. It becomes a tree 60 to 100 feet high and 2 feet in diameter, with soft white wood. The leaves, seeds, and twigs are pounded and thrown into the water."

46482 to 46486—Continued.

46485. *CARYOCAR* sp. Caryocaraceæ.

"No. 4. *Kowar*. Grows plentifully along banks of all creeks and rivers in the interior. It reaches a height of 100 feet and over and a diameter of 2 or 3 feet. The heartwood is tough and exceedingly cross-grained; makes good native corrals. The fruit is pounded in a small hole in the ground and thrown into the pool. The juice which collects while pounding the fruit is carefully scooped up and thrown in with the pounded fruit. The leaves are seldom used, as they are not nearly so powerful. The juice is exceedingly painful if it gets in the eyes, and severe headache and vomiting are caused to Europeans by inhaling the fumes when pounding the fruit."

46486. (Undetermined.)

"No. 5. *Inyak*. Grows abundantly on the open prairie only on the higher sterile ridges and mountains, on soil consisting of hard red decomposed diorite. It is a small stunted shrub not more than 20 feet high. The pounded leaves are used."

46487 to 46489.

From Los Banos, Laguna, Philippine Islands. Collected by Mr. N. Catalan, College of Agriculture. Received September 3, 1918. Quoted notes by Mr. Catalan.

46487. *CANARIUM LUZONICUM* (Blume) A. Gray. Balsameaceæ.

"*Pili*. From Mount Maquiling, Los Banos. The tree is a source of the 'brea blanca' of commerce. The stone of the fruit contains an oily endosperm which is very good to eat. The plant grows in the forest at low altitudes."

46488. *PAHUDIA RHOMBOIDEA* (Blanco) Prain. Cæsalpiniaceæ.
(*Afzelia rhomboidea* Vidal.)

"*Tindalo*. From Mount Maquiling, Los Banos. A tree that is usually found in somewhat open situations at low altitudes. The wood is very durable and beautifully colored; used for finer constructions; one of the best Philippine woods."

46489. *KOORDERSIODENDRON PINNATUM* (Blanco) Merr. Anacardiaceæ.
(*K. celebicum* Engl.)

"*Amuguis*. From Mount Maquiling, Los Banos. A medium to large tree, growing in the forest at low altitudes. According to the Philippine standard of classification, the wood falls under the third class."

46490 to 46499.

From Rosario, Argentina. Purchased in the markets by Mr. Wilbert L. Bonney, American consul. Received September 4, 1918. Quoted notes by Mr. Bonney.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants bearing beanlike seeds for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46490. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"From the Province of Buenos Aires."

46490 to 46499—Continued.

46491 to 46495. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46491. "*Porotos colorados* (Arroyo Seco). From the Province of Santa Fe."

46492. "Imported from Chile."

46493. "*Sanjuanino*. From the Province of San Juan."

46494. "*Porotos mendocinos*. From the Province of Mendoza."

46495. "*Salteño*. From the Province of Salta."

46496 to 46498. *VICIA FABA* L. Fabaceæ. Broad bean.

46496. "*Habas entrerrianas*. From the Province of Entre Rios."

46497. "*Habas de seville*. From Santa Fe Province."

46498. "*Habas salteñas*. From the Province of Salta."

46499. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"From the Province of Mendoza."

46500. *BELOU MARMELLOS* (L.) Lyons. Rutaceæ. Bel.
(*Aegle marmelos* Correa.)

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent of the Royal Botanic Gardens. Received September 5, 1918.

For previous introduction and description, see S. P. I. No. 46477.

46501. *ERUCA SATIVA* Hill. Brassicaceæ. Roquette.

From India. Presented by Mr. A. T. Gage, director of the Royal Botanic Gardens at Sibpur, near Calcutta. Received September 6, 1918.

Roquette, or rocket-salad, is a low-growing plant from southern Europe, the leaves of which resemble those of radish and turnip. It is much used by the French as a spring and autumn salad and potherb. The flavor of the young tender leaves bears a strong resemblance to that of horse-radish. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2981.)

46502 to 46521.

From Para, Brazil. Presented by Mr. André Goeldi through the American consul. Received September 9, 1918. Quoted notes by the consul.

These legumes have been introduced for use in a series of experiments in testing and breeding varieties of South American plants bearing beanlike seeds, for the purpose of selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46502 to 46508. *PHASEOLUS LUNATUS* L. Fabaceæ. Lima bean.

"No. 6. *Favas sortidas*." This package contained six varieties, which were separated as follows:

46502. A. Medium-sized beans, nearly white, with black specks on the edge.

46503. B. Small white beans.

46504. C. Large white beans.

46505. D. Large white beans with black spots and lines.

46506. E. Medium-sized grayish beans with dark-brown eye.

46507. F. Medium-sized reddish brown beans.

46508. "No. 13. *Fava preta* (black bean)."

46509 to 46518. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46509. "No. 1. *Rajado* (striped bean)."

46502 to 46521—Continued.

46510. "No. 2. *Feijão salmao* (salmon bean)."

46511. "No. 4. *Feijão viuva alegre* (merry widow bean)."

46512. "No. 5. *Mulãtinho* (mulatto)."

46513. "No. 7. *Feijão preto* (black bean)."

46514. "No. 8. *Feijão favinha* (little bean)."

46515. "No. 10. *Feijão carrapato* (tick bean)."

46516. "No. 12. *Feijão branco* (white bean)."

46517. "No. 14. *Feijão enxofre* (sulphur bean)."

46518. "No. 15. *Feijão vermelho* (red bean)."

46519. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ.

Catjang.

"No. 9. *Feijão manteiga* (butter bean)."

46520 and 46521. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

46520. "No. 3. *Fraide* (friar bean)."

46521. "No. 11. *Feijão boca preta* (black-mouth bean)."

46522. *CEIBA PENTANDRA* (L.) Gaertn. Bombacaceæ.
(*Eriodendron anfractuosum* DC.)

Kapok.

From Guadalajara, Mexico. Presented by Mr. John R. Silliman, American consul. Received September 10, 1918.

"The kapok tree, native in the American Tropics, is widely distributed in the Tropics of both hemispheres. It attains a height of 75 to 100 feet, with wide-spreading horizontal branches, making an attractive ornamental or shade tree. It is often planted along the borders of fields for fence posts. It begins to bear seed pods containing kapok down when about 5 years old, and the yield of pods increases with the age of the tree. Well-developed trees under favorable conditions yield about 7,000 pounds per acre. Kapok can not be spun, but it is an excellent material for pillows, mattresses, life preservers, etc., and its use is rapidly increasing." (*L. H. Dewey*.)

For previous introduction and further description, see S. P. I. No. 45557.

46523 and 46524.

From Los Banos, Philippine Islands. Collected by Mr. N. Catalan, College of Agriculture. Received September 11, 1918.

46523. *ERYTHRINA VARIEGATA* Stickm. Fabaceæ.

(*E. indica* Lam.)

"*Dapdap*. A tree with brilliant red flowers which form a very showy inflorescence. Seeds collected from a tree on the college farm, June 28, 1918."

46524. *ORMOSIA CALAVENSIS* Azaola. Fabaceæ.

"*Bahai*. The seed is said to be of medicinal value for certain cases of stomach trouble. The tree grows on lower portions of the forest. Seeds collected from a tree on the college farm, July 20, 1918."

46525 to 46530.

From Punta Arenas, Chile. Presented by Mr. John R. Bradley, American consul. Received September 11, 1918.

These beans have been introduced for use in a series of experiments in testing and breeding varieties of plants bearing beanlike seeds, for the purpose of

selecting or developing strains suited to the various conditions obtaining in different parts of the United States.

46525. *PHASEOLUS COCCINEUS* L. Fabaceæ. Scarlet Runner bean.

Large white beans.

46526 to 46530. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46526. Small white beans.

46527. Light-brown beans.

46528. White and yellowish white beans mixed.

46529. Mixed beans from light yellow to light brown.

46530. Grayish brown beans.

46531. *NORMANBYA MERRILLII* Beccari. Phœnicaceæ. Palm.

From Manila, Philippine Islands. Presented by Mr. E. D. Merrill, acting director of the Bureau of Science. Received September 12, 1918.

"*Bonga de China* or *Bonga de Jolo*. A medium-sized palm with graceful, somewhat curved, pinnate leaves, resembling the common betel-nut palm, but not so tall. The leaves are rather glaucous, and the pretty crimson fruits are borne just below the leaves in medium-sized bunches; the individual fruits are less than 1 inch long. This palm thrives remarkably well in Manila." (*Merrill*.)

For previous introduction, see S. P. I. No. 42722.

46532 to 46534.

From Jamaica Plain, Mass. Presented by Dr. C. S. Sargent, of the Arnold Arboretum. Received September 13, 1918.

46532. *MORUS ACIDOSA* Griffith. Moraceæ.

Usually a broad shrub from 3 to 16 feet in height, but occasionally forming a tree 25 feet tall. It is found in the Provinces of Hupeh and Szechwan, China. The leaves are very variable in size and shape and are not used for feeding silkworms. The fruits are dark red or shining black and are quite palatable. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 300.)

For previous introduction, see S. P. I. No. 45708.

46533. *PRUNUS SERRULATA SACHALINENSIS* (Schmidt) Makino. Amygdalaceæ. Sargent's cherry.
(*P. sargentii* Rehder.)

A handsome, large tree, of great ornamental value; hardy as far north as Massachusetts and bearing profusely, in early spring, handsome, rose-pink, single flowers.

For previous introduction, see S. P. I. 45248.

46534. *PRUNUS TOMENTOSA* Thunb. Amygdalaceæ. Bush cherry.

A broad, vigorous shrub, from northern China; one of the earliest cherries to flower. The flowers are large, with the white petals more or less tinged with red toward the base; the small bright-red, slightly hairy fruits are of good flavor. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, No. 19.)

"The plant thrives and fruits abundantly from Georgia to Canada. The ripe fruits make a delicious jelly." (*Bisset*.)

For illustrations showing the use of this species as a flowering shrub and as a fruiting plant, see Plates III and IV.



THE DOWNY BUSH CHERRY OF NORTH CHINA. (*PRUNUS TOMENTOSA* THUNB., S. P. I. No. 46534.)

The extreme hardiness of this species make it a promising dooryard shrub for the northern Great Plains region. It has grown well at Ottawa, Canada. While its flowers are too delicate to make this shrub ideal as an ornamental, it is one of the earliest of all the cherries to bloom, and its dark-green downy foliage and deep-red juicy cherries of good flavor make it a most attractive dwarf-fruited shrub. Worked upon the wild Chinese peach (*Amigdalus davidiana*) it is said to be longer lived than on its own roots. (Photographed by Peter Bisset at the Yarrow Plant Introduction Gardens, Rockville, Md., May 5, 1919; P23126FS.)



FRUITING BRANCHES OF THE DOWNY BUSH CHERRY. (*PRUNUS TOMENTOSA* THUNB., S. P. I. No. 46534.)

The miniature cherries of this North Chinese bush (shown one-half actual size) are refreshingly acid, and an excellent preserve has been made from them. In Canada, where the species does well, it is one of the shrubs recommended for dooryard planting, and it deserves a wide distribution in our northern Great Plains area. Little work has been done yet in the selection of large-fruited seedlings. (Photographed by Peter Bisset, Chico, Calif., May 27, 1918; P24011 FS.)

46535. MADHUCA INDICA Gmel. Sapotaceæ.*(Bassia latifolia Roxb.)*

From Seharunpur, India. Presented by Mr. A. C. Hartless, superintendent, Government Botanic Gardens. Received September 14, 1918.

Mahwa. A large deciduous tree from northern India, cultivated widely in India for its cream-colored, sweet, fleshy corollas which are dried for eating and for the manufacture of spirits.

For previous introduction, see S. P. I. No. 45195.

46536. SOLANUM sp. Solanaceæ.**Potato.**

From Tucuman, Argentina. Tubers presented by Mr. H. F. Schultz, Estacion Experimental Agricola. Received September 17, 1918.

"I am sending you to-day a small lot of the native wild potato, of which it is extremely difficult to get tubers, on account of the very short growing season we had this year. The tubers could not start growth at the accustomed time on account of prolonged drought in early summer, and it appears that they suffered later on through the extremely wet weather of the latter part of summer." (*Schultz*.)

46537 to 46559. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From Calcutta, India. Presented by Mr. James A. Smith, American consul general, who obtained them from the Economic Botanist to the Government of the United Provinces. Received September 17, 1918. Information by Mr. Smith.

46537. No. 1. *Katdi danti*. From Rae Bareilly.

46538. No. 2. *Ujli danti*, Big Posti. From Rae Bareilly.

46539. No. 3. *Posti*. From Faizabad.

46540. No. 4. *Kataila*. From Faizabad.

46541. No. 5. *Bharbharwa*. From Faizabad.

46542. No. 6. *Posti*. From Bahraich.

46543. No. 7. *Bhagalpur*. From Bahraich.

46544. No. 8. *Bhagalpur*. From Bahraich.

46545. No. 9. *Chinsarwa*. From Bahraich.

46546. No. 10. *Chinsarwa*. From Bahraich.

46547. No. 11. *Kan phatwa*. From Bahraich.

46548. No. 12. *Kataila*. From Bahraich.

46549. No. 13. *Kali danti*. From Ghazipur.

46550. No. 14. *Golgalwa*. From Ghazipur.

46551. No. 15. *Bhagwatia*. From Ghazipur.

46552. No. 16. *Jeliwa*. From Ghazipur.

46553. No. 17. *Hariella*. From Etawah.

46554. No. 18. *Kali danti*. From Etawah.

46555. No. 19. *Kataila*. From Etawah.

46556. No. 20. *Posti*. From Lucknow.

46557. No. 21. *Baunia*. From Lucknow.

46558. No. 22. *Mandrass*. From Lucknow.

46559. No. 23. *Kataila*. From Lucknow.

46560. ALLIUM TRIQUETRUM L. Liliaceæ.

From Algiers, Algeria. Bulbs presented by Dr. L. Trabut. Received September 18, 1918.

"Used by the natives as a vegetable. Resembles a leek. Plant the bulbs 8 inches apart and not very deep." (*Trabut.*)

46561 and 46562. COPERNICIA CERIFERA Mart. Phœnicaceæ.**Wax palm.**

From Brazil. Presented by Mr. H. M. Curran. Received September 6, 1918. Quoted notes by Mr. Curran.

A palm 25 to 30 feet high with fan-shaped, rather finely cut leaves 2 to 3 feet in diameter. The wax is extracted by drying the leaves in the sun, when the wax appears in the form of a powder. The fruit is valued for hog feed. The trunks are extensively employed in building houses. (Note by *Dorsett, Shamel, and Popenoe.*)

46561. "Seeds from Pernambuco, Brazil."

46562. "Seeds from Bahia, Brazil."

For previous introduction and further description, see S. P. I. No. 37866.

46563. ORYZA SATIVA L. Poaceæ.**Rice.**

From Trujillo, Peru. Presented by Mr. A. Martin Lynch. Received September 13, 1918.

Seed of the 90-day rice known as *Italiano*. Introduced for the variety tests being carried on by the United States Department of Agriculture.

46564. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham for the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received September 14, 1918.

A small evergreen tree, native of Paraguay and Brazil, whose leaves are roasted and ground to make the Paraguay tea of commerce. (Adapted from *Friderici, Tropenpflanzer*, p. 776.)

For previous introduction with full description, see S. P. I. No. 43456.

46565. AVENA STERILIS L. Poaceæ.**Oats.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received September 14, 1918.

"Variety *culta*. Several kinds in mixture." (*Trabut.*)

46566. PYRUS COMMUNIS × SEROTINA. Malaceæ.**Pear.**

From Avery Island, La. Cuttings presented by Mr. E. A. McIlhenny. Received September 17, 1918.

"This pear originated in the orchard of Mr. E. A. McIlhenny, Avery Island, La. Mr. McIlhenny has a LeConte orchard, 8 or 9 years old, propagated from trees made from cuttings. The original trees from which the cuttings were taken have been lost. Eight trees in the LeConte orchard are of the new type

and differ materially from the LeConte trees. The new type is spreading in habit and has roundish fruit about as large as a medium-sized apple. The fruit is of fair quality, comparing favorably with LeConte. It is believed that the eight trees are bud sprouts from a limb or branch from which the original cuttings were taken. The fact that there are only eight trees would indicate that there was a limited supply of wood. This pear is of interest because up to this time it has been practically free from fire-blight, while the LeConte trees in the same orchard have blighted badly." (*B. T. Galloway.*)

46567. CAPRIOLA INCOMPLETA (Nees) Skeels. Poaceæ. Grass.
(*Cynodon incompletus* Nees.)

From Johannesburg, South Africa. Presented by Mr. J. Burtt Davy. Received September 18, 1918.

"This species spreads by surface runners and does not produce stolons as does *C. dactylon*. It is difficult to collect seed, as the grass is so closely grazed by stock of all sorts that it is difficult to find mature seed." (*Davy.*)

46568 to 46572.

From Canton, China. Presented by Mr. G. Weidman Groff of the Canton Christian College. Received September 23, 1918. Quoted notes by Mr. Groff.

46568 to 46570. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

46568. "*Shanchi*, or mountain lychee. One of the wildest forms of lychee growing in the Tsenyuen district. Especially valuable as stock. July 17, 1918."

46569. "*Waaï chi*; one of the edible forms. Fruit from the orchards of Canton Christian College. July 17, 1918."

46570. "*Loh haai tuen*; an edible lychee. Secured from orchards of the Canton Christian College. July 17, 1918."

46571. MYRICA RUBRA Sieb. and Zucc. Myricaceæ. Yang mei.

"*Shui yeung mui*. A very interesting fruit from Canton. A kind of plumlike fruit common on the market of Canton in the month of May. This fruit makes a most attractive appearance, and it is always marketed with the dark-green leaves attached to the fruit. In general appearance it is not unlike a strawberry, but it is more rounded. It has a roughened skin and is quite acid in taste. There is but one seed, which is difficult to detach from the flesh. July 18, 1918."

An old tree as it grows in China is shown in Plate V, while Plate VI shows fruits of an improved variety.

46572. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ. Japanese apricot.

"These fruits, known on the Chinese (Cantonese) markets as *Hang mui*, are quite common in Canton in the month of May. The fruit is somewhat like an apricot. It is said there are several different types. A bitter principle exists in these particular fruits, but they make a very fine jelly. This number has possibilities as a cultivated fruit or as a stock. July 18, 1918."

- 46573. AZADIRACHTA INDICA** JUSS. *Meliaceæ.* **Neem tree.**
(*Melia azadirachta* L.)

From Sibpur, near Calcutta, India. Presented by Mr. G. T. Lane, curator of the Royal Botanic Garden. Received September 14, 1918.

A large tree, sometimes 50 feet tall, native to India. The pinnate leaves are made up of 9 to 15 ovate, serrate leaflets. The white, fragrant flowers hang in graceful panicles and are followed by clusters of ovoid, dark-purple drupes the size of an olive. The wood resembles mahogany and takes a beautiful polish. It is used in making furniture, carts, ships, agricultural implements, and Hindu idols. The sap is used in the spring in making a cooling drink. A gum, which exudes from the bark, is used as a stimulant. Margosa oil, extracted from the pulp of the fruits by boiling or by pressure, is an acrid, bitter oil used in medicine and in dyeing. The seeds are employed in killing insects. (Adapted from *Brandis, Forest Flora of India*, p. 67.)

- 46574. PERSEA AMERICANA** Mill. *Lauraceæ.* **Avocado.**
(*P. gratissima* Gaertn. f.)

From Coyacan, Mexico. Presented by Mrs. Zelia Nuttall. Received September 25, 1918.

"When Mr. Popenoe was here lately he asked me what variety of aguacate I thought the best I had ever tasted, here or in other countries. I told him that I considered those of a certain kind grown on my own place, Casa Alvarado, the finest in flavor and creaminess; besides, the skin was so thin it could be peeled off as readily as that of a ripe peach. I was able to let him try the first ripe ones of this year's crop, and he was delighted with them and asked me to send him lots of seeds." (*Mrs. Nuttall.*)

- 46575. DACRYDIUM CUPRESSINUM** Soland. *Taxaceæ.* **Rimu.**

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received September 24, 1918.

"Rimu seed. Prettiest of all our native trees; a real treasure." (*Wright.*)

This pine is one of the most beautiful objects in the New Zealand bush. Its pale-green drooping branches differ from those of any other forest tree. The leaves are only small prickles running up a long stem, from which branch other small stems whose united weight causes the main stem to hang like the branches of the weeping willow. The whole tree, when young, has the appearance of a lycopodium. The fruit is tiny, but beautiful, the nut being blue-black and the cup red. The timber is red and yellow and beautifully marked. It is used to great advantage in dados, panels, and for ceilings. The Taranaki rimu is especially straight in the grain and very resinous. It is much used for bridge building in that district. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 74.)

46576 to 46586.

From eastern Asia. Cuttings collected by Prof. F. C. Reimer, superintendent, Southern Oregon Experiment Station, Talent, Oreg. Received April 16, 1918. Numbered September 31, 1918. Quoted notes by Prof. Reimer.

- 46576. PYRUS** sp. *Malaceæ.* **Pear.**

"(No. 51. *Mi li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a roundish medium-sized pear, about 2 inches in diameter. It is yellow in color, and the calyx is deciduous. The flesh is firm and



AN OLD TREE OF THE YANG MEI IN SHANGHAI. (*MYRICA RUBRA* SIEB. AND ZUCC., S. P. I. NO. 46571.)

Its sea-green foliage and carmine-colored fruits the size of small plums make this a very attractive park tree. Its slow growth has doubtless interfered heretofore with its figuring anywhere very largely as an orchard tree, but its freedom from disease and ability to grow on rocky soils taken in connection with the excellent character of its fruits entitle it to much more attention than has been given to it so far. In Canton fruiting branches of it are common on the markets in May. In California trees have fruited in July. (Photographed by F. N. Meyer, Jessefield Park, Shanghai, China, June 11, 1915; P12298F.S.)



FRUITS, SEEDS, AND LEAVES OF AN IMPROVED VARIETY OF THE YANG MEI.
(*MYRICA RUBRA* SIEB. AND ZUCC., S. P. I. NO. 46571.)

Whereas in Japan the *yama momo* (mountain peach), as it is called, is a fruit of comparatively little importance, in parts of China, where it is called *yang mei* or *nagi*, various distinct horticultural varieties have been developed. The fruits of these vary in size from that of a cherry to that of a medium-sized plum, in color from dull white to deep carmine, and in flavor from very acid to refreshingly sweet. The tree is evergreen and when in fruit strikingly beautiful. It is a slow grower and difficult to transplant. The fine varieties are worked on small-fruited seedling stocks. In America trees have fruited in September at Del Monte and Chico, Calif., and specimens are growing at Brooksville, Fla. This species grows wild in rather poor but well-drained rocky soils in semishaded localities and will stand temperatures of 113° F. The showy color of its fruit, the intense carmine of their juice, the ability of the tree to grow in rocky semishaded localities, and the various uses to which its fruit can be put should entitle the *yang mei* to the serious consideration of American horticulturists. For description of the introduction of seeds of the *yang mei*, see S. P. I. No. 46571. (Photographed by F. N. Meyer, Hangchow, Chekiang, China, June 30, 1915; P13220FS.)

46576 to 46586—Continued.

juicy, and the grit cells are not noticeable. The flavor is sweetish and the quality only fair. In some places in northern China this has proved the most profitable variety."

46577. PYRUS sp. Malaceæ. Pear.

"(No. 52. *Tang li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a large pear, ovate or ovate-oblong in shape, and has a russet color. The calyx is deciduous. The flesh is firm, and the grit cells not noticeable. The flavor is sweet and of fair quality. This is an interesting variety, since it shows some of the characteristics of *Pyrus ussuriensis*, especially in leaf characters, while the color of the fruit is not characteristic of this species. It may be a hybrid with *P. ussuriensis* as one of the parents."

46578. PYRUS sp. Malaceæ. Pear.

"(No. 53. *Fo chien hsi*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is of medium size, slightly flattened, yellowish in color; the calyx is deciduous; the flesh is hard, juicy, and rather sweet. It is an excellent shipper and keeper. Highly regarded in northern China."

46579. PYRUS sp. Malaceæ. Pear.

"(No. 55. *Ma li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is a medium to large flat pear, yellow in color, russet toward the base, and covered with small light dots. It has a deciduous calyx, and the stem is of medium length. The flesh is firm, rather coarse, sweet, and fair in quality. It ripens the latter part of August in northern China."

46580. PYRUS sp. Malaceæ. Pear.

"(No. 58. *Yarh li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This is the most widely grown pear in northern China. It is of large size and resembles the *Bartlett* in shape. It has a beautiful, clear, light-yellow color. The flesh is firm, juicy, and sweet, and free from grit cells. This pear possesses extraordinary keeping qualities and can be purchased at any time throughout the entire winter. It is in best condition for eating during the latter part of winter and early spring."

46581. PYRUS sp. Malaceæ. Pear.

"(No. 56. *Chieh li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is of medium size, varying from ovate to obovate in shape and dull greenish yellow in color. The calyx is persistent. The flesh is soft, very juicy, and of fair quality. It ripens about the first of September. This is a variety of *Pyrus ussuriensis*, and should prove valuable in breeding work."

46582. PYRUS PHAEOCARPA Rehder. Malaceæ. Pear.

"(No. 36. From Chosen (Korea).) A pear which is used as a root-stock for cultivated pears at Seoul. This type produces its fruit in clusters of three to eight. The pears are from one-half to three-fourths of an inch in diameter, roundish or short turbinate in shape, brown or russet in color, and usually have three, or rarely two or four, covered cells or seed cavities. The trees which I saw were still young and from 6 to 12 feet high. The young shoots are densely pubescent. The leaves are of medium size, and the margins are crenate or bluntly serrate."

46576 to 46586—Continued.

These trees had evidently grown from the rootstock of some cultivated varieties of pears. Of no value except possibly as a stock in this country."

46583 and 46584. *PYRUS SEROTINA* Rehder. Malaceæ.

Pear.

46583. "(No. 38. *Imamura Aki*. Obtained at Yokohama, Japan.)

This is one of the best varieties of pears in Japan and Chosen (Korea). It is a large, russet pear and distinctly ovoid in shape. The fruit ripens late in the fall and is in good condition to eat during early winter. In quality it ranks among the best Japanese pears."

46584. "(No. 39. *Meigetsu*. Obtained at Yokohama, Japan.) This

is considered the very finest pear in Japan and Chosen (Korea). It is a very large pear, oblong or oblong-elliptical in shape, and of bright russet color. The tree is very vigorous and productive. Should be thoroughly tested in this country, especially for blight resistance."

46585 and 46586. *PYRUS USSURIENSIS* Makim. Malaceæ.

Pear.

46585. "(No. 50. *Ta suan li*. Obtained at Maoshan, near Malanyu,

Chihli, China.) This is one of the most interesting and may prove one of the most valuable pears that I saw in China. It is very popular in the mountain districts northeast of Peking. The fruit is medium to large in size, slightly flattened in shape, and greenish yellow in color. It has a persistent calyx, and the stem is medium to long. The flesh is hard, possesses large grit cells around the core, and has a very tart flavor. It is an excellent keeper, often remaining in good condition until early spring under suitable conditions. While it can not be recommended as a desirable commercial variety, it should prove of great value in breeding blight-resistant and hardy varieties for cold regions. In our work the wild *Pyrus ussuriensis* has shown greater resistance to fireblight than any other species, and since this species also endures more cold than any other, this variety should prove of great value in breeding work."

46586. "(No. 54. *E' li* or *nah li*. Obtained at Maoshan, near Malanyu, Chihli, China.) The fruit of this pear is very large, of oblong shape and greenish color. It ripens the latter part of September, is very fragrant, and of poor flavor. The calyx is persistent. It is to be regretted that the flavor is not better; however, its large size, and the fact that it belongs to *Pyrus ussuriensis* makes it a promising variety for breeding purposes."

46587. *PYRUS USSURIENSIS* Maxim. Malaceæ.

Pear.

From China. Cuttings collected by Prof. F. C. Reimer, superintendent. Southern Oregon Experiment Station, Talent, Oreg. Received April 16, 1918. Numbered September 31, 1918. Quoted notes by Prof. Reimer.

"(No. 59. *Hung li*. Obtained at Maoshan, near Malanyu, Chihli, China.) This pear is medium to almost large in size, round or roundish oblong in shape, and yellow with an attractive red blush. The flesh is very firm, juicy, and sweet, and only fair in quality. The fruit ripens during the latter part of September and has remarkable keeping qualities, being found on the markets until late winter. It is probably of hybrid origin."

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BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1918.

(No. 57; Nos. 46588 to 46950.)



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Wilbur A. Patten, Superintendent, Plant Introduction Garden, Brooksville, Fla.

E. J. Rankin, Assistant in Charge, Plant Introduction Garden, Savannah, Ga.

Collaborators: Thomas W. Brown and Robert H. Forbes, Cairo, Egypt; A. C. Hartless, Scharunpur, India; Barbour Lathrop, Chicago, Ill.; Dr. H. L. Lyon, Honolulu, Hawaii; Henry Nehrling, Gotha, Fla.; Charles T. Simpson, Little River, Fla.; Dr. L. Trabut, Algiers, Algeria; E. H. Wilson, Jamaica Plain, Mass.; E. W. D. Holway, Faribault, Minn.; Dr. William Trelease, Urbana, Ill.

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INTRODUCTORY STATEMENT.

It might appear that a single one of these inventories contains enough experimental plant material to keep a corps of scientists busy for years. This is true, but the fact should not be lost sight of that these are new plants introduced for the use of an increasing number of amateurs of a great country. There are already 10,000 more or less trained experimenters scattered from Alaska to southern Florida who will look over the plants which are described here and wonder if some particular one may not add to his list of field or garden or dooryard plants. The work of testing a new plant requires years, land, money, and individual interest and attention; and the only way to do the work rapidly is to enlist the intelligent cooperation of a great many people.

A great many tropical species are represented here, and those who live in the North may wonder at this. It must not be forgotten that the plants which grow in the colder regions are those which have, by slow adaptation to the cold, crept out of the Tropics, and that there are ten times as many undiscovered useful plants remaining in the Tropics to-day as are to be found in the colder regions of the globe. The plant breeder is striving by means of his art to select the hardiest of these tropical species and adapt them for cultivation as far north as they will grow. This is a great field for research.

With the exception of a collection made by Wilson Popenoe in Mexico, all of the plants here described have come in from foreign friends of the work or through direct solicitation by correspondence.

Mr. Popenoe's collection covered by Nos. 46781 to 46787 includes the ilama, a rose-tinted fruit, which belongs in the class with the cherimoya and sugar-apple and is remotely related to the hardy papaw of the eastern United States (*Asimina triloba*). In view of the fact that triple hybrids combining three species of the genus *Annona*

have been produced and prove to be delicious new creations, the idea may not be fantastic that some one some day will bring hardiness into this remarkable tropical fruit through crosses with our hardy Asimina. Mr. Popenoe has discovered, in fact, a tropical species of the Annona family (*Sapranthus* sp., No. 46786) which curiously resembles the Asimina in the shape of its fruits, but is bright orange in color. This might bridge the gap between the Annona and the Asimina. Acres of the tropical papaya (*Carica papaya*) in southern Florida provide this fruit regularly to the southern markets, and a new variety (*Carica* sp., No. 46782), with an edible coating, or aril, around its seeds, can scarcely fail to be of interest to the public, which is rapidly growing fonder of this appetizing fruit. Much remains yet to be done in the improvement of this remarkable fruit tree. It is hard for one living in the North to realize the craving of one who lives in a region where the grape does not grow for its peculiar refreshing flavor. Mr. Popenoe has introduced another promising tropical grape called the totoloché (*Vitis* sp., 46787), which is related to the Muscadine and although still in the wild state bears clusters of berries half an inch in diameter.

Mr. J. Burtt Davy, who has contributed many new plants from South Africa, has sent in a collection (Nos. 46804 to 46820) which includes a sand binder from the Cape flats (*Acacia cyclops*, No. 46804); the kameel doorn, a shade tree from British Bechuanaland (*Acacia giraffae*, No. 46805); a pasture grass (*Eragrostis superba*, No. 46806); a hibiscus with deep-crimson flowers (*Hibiscus urens*, No. 46807); a beautiful blue-and-white Lobelia (*Lobelia erinus microdon*, No. 46808); the karree boom, a species of sumac which is reported to resemble the pepper tree so much used in California but to be hardier and even more ornamental in habit (*Rhus viminalis*, No. 46810); and a collection of the best yielding wheats from the western provinces of South Africa (Nos. 46812 to 46817).

During his trip to Europe on war work, Dr. W. A. Taylor, Chief of the Bureau of Plant Industry, visited the Plant Breeding Institute of Prof. Biffen, of Cambridge, England, and sent in seed of the Yeoman wheat (No. 46797) which had been such a remarkable yielder in England; a preliminary test gave 96 bushels per acre. It is a cross between one of Prof. Biffen's varieties and the Red Fife wheat of Canada and may prove suited to some of our own wheat areas.

The success of the Federation wheat (No. 46794) on the Pacific coast has, I understand, been a matter of keen satisfaction to the Australian friends of that remarkable plant breeder, Farrar, whose work was so long in being recognized.

The development of Australia is bringing to the front many valuable new plants. This inventory chronicles the arrival of the elephant grass (*Pennisetum purpureum*, No. 46890), which yields there 30 tons of hay per acre; a hardier species of the river oak or Australian pine (*Casuarina cunninghamiana*, No. 46881) than the one which has been planted by the hundreds of thousands in southern Florida; a drooping-branched species of the she-oak (No. 46882), which is said to be most beautiful; and the edible canna (*Canna edulis*, No. 46821), which is grown in Australia for the production of arrowroot and which has already shown remarkable adaptability to cultivation on the Everglades of Florida, a single plant having produced 80 pounds of tubers.

The problem of having green leafy vegetables throughout the summer in tropical regions is a difficult one, and the introduction from Yucatan of the chaya (*Jatropha urens*, No. 46862), a rapid-growing bush or small tree with succulent leaves which are cooked and eaten with eggs, like spinach, is worthy of particular mention. The idea of a dooryard tree from which a mess of greens can be picked strikes us as strange, because we have always gotten our tender leaves from low-growing plants; but there is no reason for discrimination against the tree.

The guarana (*Paullinia cupana*, No. 46863) is a tropical species of *Paullinia* from Para, where the seeds, which contain 5 per cent of thein, are used to make a beverage. The searchers for this alkaloid may find this species a valuable source.

In the tropical vegetable garden of the future the yam (*Dioscorea alata*, No. 46768) will not be omitted, and those varieties which rival the best potato in flavor and texture will come into favor. Already, discriminating growers in Florida are beginning to grow several of the introduced varieties.

Mrs. Nuttall, whose acquaintance with the Indian food plants of Mexico is exceptional, recommends from her own personal experience the huauhtzontli (*Chenopodium nuttalliae*, Nos. 46632 and 46633) as a delicious dish when prepared in Mexican fashion. As the species seems to be very easily grown in the Southwest, the gardeners of that region may find in it a desirable new vegetable.

There is something fascinating to a child and to many grown-up people in a gourd. The most brilliantly colored one which I have seen is the *Trichosanthes quinqueangulata* (No. 46642) from the Philippines. It is about the size of those baubles which are hung on Christmas trees, and being beautiful carmine-red in color and lasting for months it is most attractive and should be grown in the South and shipped north at Christmas time.

Citrus growers in California and Florida will await impatiently the fruiting of the Vermilion orange or Chu kaa (*Citrus nobilis*, No.

46646), of Swatow. Atherton Lee predicts that if this orange succeeds as well in this country as it does in South China it will rival the Navel, the Valencia, and the Satsuma in popularity. As Mr. Lee has been studying citrus canker in the Orient, and as he finds this variety resistant to that disease, its thorough trial by citrus growers is desirable.

The Chinese jujube has proved such a success in the irrigated valleys of California and in Texas that the fruiting of the strictly tropical species (*Ziziphus mauritiana*, No. 46720) at Miami, Fla., is being watched with considerable interest. The same propensity to bear large crops seems to characterize this tropical species as it does the Chinese one, and it would not be surprising if this species should become a common fruit tree wherever it can be grown.

The night-blooming cereus is one of those plants the flowering of which is an event in anyone's garden. A species from Colombia (*Cereus* sp., 46721), with blood-red flowers the size of a saucer, should attract the attention of greenhouse owners and may lead to races having all sorts of delicate-colored flowers.

Artemisia cina (No. 46712) is the plant which yields the vermifuge known as wormseed. It is a wild species in Russian Turkestan. Its introduction into this country and cultivation at Chico, Calif., would seem to indicate the possibility of a commercial crop in this important drug plant, since its wide use in the treatment of hogs has created a large demand for it.

Prof. Sargent has selected as one of the loveliest of all flowering trees, *Malus arnoldiana* (No. 46698), a hybrid between *M. pulcherrima* and *M. cerasifera*, both of which are probably of hybrid origin.

It is now over a century since the tomato came into notice as the "poison love apple" which everyone was cautioned not to eat. Its relative from Colombia (*Solanum quitoense*, No. 46947), with fruits the size of small oranges which are used there for flavoring preserves, seems to have been left untested, although it is worthy of trial wherever it will grow.

The extent to which trees and shrubs can be used as forage for cattle has not been thoroughly investigated anywhere, although in India a species of jujube is thus used, and in Brazil a species of sensitive plant (*Schrankia leptocarpa*, No. 46719) is employed. The recommendation of Sr. Argollo Ferrão is sufficient to make it worth while testing this plant seriously on the Everglades of southern Florida.

The spectacular development of the Balsa wood industry, which has grown almost overnight into a very important factor in the refrigeration business, would seem to make it worth inquiry as to whether the New Zealand cork-wood tree (*Entelea arborescens*, No.

46749), which produces wood little more than half as heavy as cork, might not be useful for the same purposes.

The tropical jack-fruit tree is hardy in southern Florida, but its fruits are of little value. If its near relative (*Artocarpus odoratissima*, No. 46635), which Wester declares has deliciously flavored fruits, should prove as hardy, it might add another valuable tree to the list of those which the southern Florida grower can have about his home.

The South African amatungulu (*Carissa grandiflora*), which was introduced by Lathrop and Fairchild from Natal in 1902, has become the favorite hedge plant of southern Florida. Its relative, *Carissa carandas* (No. 46636), which bears black instead of crimson fruits, is said by Wester to be one of the best small fruits which has been introduced into the Philippines in recent years. What may be done with it in Florida, or whether hybrids of these various species of *Carissa* can be made, remains for the plant breeders to determine.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., September 30, 1921.

INVENTORY.¹

46588. *PISTACIA CHINENSIS* Bunge. Anacardiaceæ.

Chinese pistache.

From Chico, Calif. Collected by Mr. R. L. Beagles, of the Bureau of Plant Industry. Received October 19, 1918.

"Seeds gathered at the Plant Introduction Field Station, Chico, Calif., from trees which were grown from seeds collected in China by Mr. Frank N. Meyer, received here in 1908, and assigned S. P. I. No. 21970." (*Peter Bisset.*)

46589 to 46594.

From Bender Abbas, Persia. Received May 9, 1918, without name of sender or information other than the numbers given here. Numbered October 1, 1918.

46589. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

(84604 No. 80.)

46590 to 46594. *TRITICUM AESTIVUM* L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

"A collection of Persian wheat varieties, probably of hybrid origin. All samples are awned and have brown, pubescent glumes and soft, white kernels." (*J. A. Clark.*)

46590. (84604 No. 80.)

46593. (84607.)

46591. (84605 No. 78.)

46594. (84606.)

46592. (84604 No. 81.)

46595. *PENTSTEMON PALMERI* A. Gray. Scrophulariaceæ.

Beardtongue.

Plants grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

"*Pentstemon palmeri*, from the western and southern slopes of the San Francisco Mountains of Arizona, is one of the best and most promising native species of this useful genus of ornamental plants. It withstands droughty conditions well and responds remarkably to good treatment. In nature the spikes stand 4 to 6 feet high, and the plant is reduced to little more than a rosette of basal leaves at the close of the long, dry, late summer and autumn. Under conditions at Chico, Calif., the flowering stems may stand 6 to 7 feet high, and the plants go into winter with a vegetative growth of 18 inches or more. Its abundant glaucous green foliage, long spike (2 to 3 feet) of large light-pink flowers opening progressively from below, together with its very robust habit, make it a desirable acquisition to our long list of pentstemons. It has good seed habits and if started early in flats and transplanted into the open in early spring it will blossom sparingly the same year." (*David Griffiths.*)

46596 to 46629.

From Ecuador. Seeds and tubers collected by Dr. J. N. Rose, associate curator, National Herbarium, Washington, D. C. Received September 25, 1918. Quoted notes by Dr. Rose. Numbered October, 1918.

46596 to 46607. *ZEA MAYS* L. Poaceæ.

Corn.

"No. 10a. Various samples of corn obtained from Indians in the Ambato market."

46596. "Maroon."

46597. "Reddish brown."

46598. "Dark red-brown."

46599. "Light red-brown."

46600. "Light brown."

46601. "Light brown shading to cream."

46602. "Yellow; kernel short and thick."

46603. "Yellow; kernel long and slender."

46604. "Light yellow; kernel broad."

46605. "Light yellow; kernel wedge shaped."

46606. "Cream color."

46607. "Nearly white."

46608 to 46610. *OXALIS TUBEROSA* Molina. Oxalidaceæ.

Oca.

46608. "No. 19a. Tubers of an elongated form from Ambato."

46609. "No. 19b. Tubers of a red form obtained at Huigra."

46610. "No. 19c. Tubers of a yellow form."

46611. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

"No. 23. *Zafallo*. Fruit very large and sometimes weighing 100 pounds. Used like our pumpkin."

46612. *DOLICHOS LABLAB* L. Fabaceæ.

Bonavist bean.

"No. 24: 24121. *Avilla*; a legume. Seed brown with large white aril."

46613. *FRAGARIA CHILOENSIS* (L.) Duchesne. Rosaceæ.

Strawberry.

"No. 26. Strawberries from the Guayaquil market. A very large strawberry which grows in the dry plains without irrigation. It ought to do well in Texas and southern California."

46596 to 46629—Continued.

46614. *OPERCULINA* sp. Convolvulaceæ.

"No. 28: 22115. A vine running over bushes about Guayaquil."

46615. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

"No. 29: 22105. Wild cotton in swamps about Guayaquil. Also cultivated."

46616. *SIDA* sp. Malvaceæ.

"No. 30: 22172. *Sida* at Huigra; has pretty violet flowers."

46617. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 31: 22172. From Huigra. A vine."

46618. *CARDIOSPERMUM* sp. Sapindaceæ.

"No. 32. From Guayaquil."

46619. *ONOSERIS SPECIOSA* H. B. K. Asteraceæ.

"No. 33: 22125. A pretty asterlike plant from Huigra; flowers large, very beautiful."

46620. *HELIANTHUS* sp. Asteraceæ.

Sunflower.

"No. 34: 22231. From the mountains above Huigra. Altitude 6,000 feet."

46621. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"No. 35: 22104. Flowers small; on bushes about Guayaquil."

46622. *CUCURBITA FICIFOLIA* Bouche. Cucurbitaceæ.

"No. 37: 22223. *Tambo*. Resembles a small watermelon. Flesh white, sweetish; made into dulces and also eaten as a vegetable."

46623. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

"No. 40: 22354. From Ambato. Called *chamburo* in Ambato, but a different species from No. 20 sent in from Huigra as *chamburo*; fruit small."

46624. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"No. 41: 22338. Avocado from Ambato; fruit brownish to black, but sometimes green or red, 2½ to 4 inches long; a fine fruit but small."

"This variety apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)

46625. *TROPAEOLUM TUBEROSUM* Ruiz and Pav. Tropæolaceæ.

Anyu.

"No. 47. Tubers of *Mushu* obtained in the markets of Ambato and Huigra."

46626. *PHASEOLUS* sp. Fabaceæ.

"No. 59. Leguminous vine; near Huigra."

46627 and 46628. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

46627. "No. 60: 22299. A delicate vine."

46628. "No. 61: 22191. Tall vine; from Huigra."

46629. *PASSIFLORA SUBEROSA* L. Passifloraceæ.

"No. 62: 22249. Small greenish flowers and small purple fruit; near Huigra."

46630. ANNONA SENEGALENSIS Pers. Annonaceæ.

From Ibadan, Southern Nigeria, Africa. Presented by the Director of Agriculture. Received October 3, 1918.

"Abo (wild sop) seeds."

Annona senegalensis varies greatly in size from a low shrub to a tree 20 feet high. The leaves are coriaceous and the flowers are borne singly on decurved pedicels. The edible fruit is yellow or orange when ripe and from 1 to 2 inches in diameter. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 16.)

See S. P. I. No. 38525 for previous introduction.

46631. SOLANUM QUITOENSE Lam. Solanaceæ.**Naranjilla.**

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seed received in June, 1917, from Dr. Frederic W. Goding, American consul general at Guayaquil, Ecuador. Numbered for convenience in distribution, October 31, 1918.

"The fruits of these plants are delicious for ices." (*Goding.*)

"A shrubby plant bearing fruits that resemble small oranges in size and color and possess a peculiar fragrance." (*Peter Bisset.*)

46632 and 46633. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ.**Huauhtzontli.**

From Mexico. Purchased through Mrs. Zelia Nuttall, Casa Alvarado, Coyacan, Mexico. Received October 5, 1918. Quoted notes by Mrs. Nuttall.

46632. "Black-seeded form from Xochimilco which the agriculturists there consider the best. It is of last year's crop, which is particularly prized. Several Indians told me that huauhtzontli was considered 'more nourishing than meat.' My cook prepares it for me as follows: She makes bunches of the inflorescence, ties and boils them in water and salt, then scrapes the green seeds off and shapes the mass like a small flat croquette, puts a small piece of cheese in it, dips the whole in batter made of egg and a little flour, and fries like croquettes. Sometimes she makes what looks like an omelet in the same way."

46633. "Yellow-seeded form. This was grown near Coyacan, by an old Indian woman."

For previous introduction, see S. P. I. No. 46311.

46634. DATURA FASTUOSA L. Solanaceæ.**Datura.**

From Calcutta, India. Presented by Mr. H. G. Carter, of the Indian Museum. Received October 4, 1918.

"Variety *alba*. So far as our inquiries go, there is no material difference in medicinal properties between the different varieties of *Datura fastuosa*." (*Carter.*)

An annual, 4 to 5 feet high, native to India. The ovate-lanceolate, wavy margined leaves are 7 to 8 inches long. The trumpetlike flowers, 7 inches long, have an angled, purple calyx, and the corolla is usually violet, but is white or nearly so in the variety *alba*. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 2, p. 971.)

46635 to 46642.

From the Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Zamboanga. Received October 7, 1918. Quoted notes by Mr. Wester except as otherwise indicated.

46635. *ARTOCARPUS ODORATISSIMA* Blanco. Moraceæ. Marang.

"I might mention that after four years I have renewed my acquaintance with the *marang*, and I want to reiterate that it is the best fruit of the genus that I have eaten. Iced, it is a very delicious fruit indeed."

For previous introduction, see S. P. I. No. 36256.

46636. *CARISSA CARANDAS* L. Apocynaceæ. Natal plum.

"A thorny shrub from India, with plumlike black fruits having semi-transparent subacid flesh of very good flavor. A very good fruit eaten out of hand, and it would probably make a good preserve. One of the best small fruits introduced into the Philippine Islands within recent years."

For previous introduction, see S. P. I. No. 41506.

46637. *CITRUS* sp. Rutaceæ.

"*Bankit*, from Jolo, Sulu."

46638. *ERYTHRINA* sp. Fabaceæ.

"A giant tree from Lamac, Mindanao, attaining a height of 50 feet and a trunk diameter of 5 to 6 feet. Sometimes planted as shade for coffee."

46639. *FICUS* sp. Moraceæ.

Fig.

"Very ornamental, with drooping willowlike branches."

46640. *HETEROSPATHE ELATA* Scheff. Phœnicaceæ.

Palm.

"A tall, unarmed palm, with a slender, straight stem and long pinnate leaves, growing in protected situations and where the rainfall is evenly distributed. It is one of the most attractive and graceful palms that I have seen, and from my experience with it at Lamac it will make a good plant for the conservatory, and possibly a good house palm."

46641. *COLUBRINA ASIATICA* (L.) Brongn. Rhamnaceæ.

"A glabrous shrub with alternate leaves and axillary clusters of small greenish flowers having a fleshy disk in the calyx tube, suggesting the genus *Euonymus* or *Ceanothus*.

"This plant is widely spread in Polynesia and is found in India, Ceylon, Java, Borneo, New Guinea, Australia, and southwestern Africa. In Samoa and in Fiji the leaves are used for washing. They form a lather in water like soap. The vernacular name in Fiji signifies 'much lather' or 'big foam.' The special use to which it is devoted in Samoa is the cleansing and bleaching of the white shaggy mats which the natives make of the fiber of an urticaceous plant, *Cypholophus macrocephalus*." (*Safford, Useful Plants of Guam, p. 246.*)

46642. *TRICHOSANTHES QUINQUANGULATA* A. Gray. Cucurbitaceæ.

"A climbing annual vine with globose, carmine-colored fruits somewhat larger than an apple. The fruits keep indefinitely and retain their color for many weeks."

46643 and 46644. NOTHOFAGUS spp. Fagaceæ.

From Tapanui, New Zealand. Presented by Mr. H. R. Wright, Avondale, Auckland. Received October 10, 1918.

46643. NOTHOFAGUS FUSCA (Hook. f.) Oerst.**Red beech.**

A large New Zealand tree often reaching a height of 100 feet and having a trunk diameter of 12 feet. The leaves, about $1\frac{1}{2}$ inches long, are oblong-ovate with serrate margins. It is sparsely distributed throughout the islands in damp situations. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

46644. NOTHOFAGUS MENZIESII (Hook. f.) Oerst.**Silver beech.**

A large tree, up to 100 feet, with silvery bark. The shining, dark-green leaves, about half an inch long, are ovate with crenate margins. It is found on the subalpine slopes of the mountains. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 133.*)

46645. SALVIA HISPANICA L. Menthaceæ.**Chia.**

From San Luis Potosi, Mexico. Procured by Mr. Cornelius Ferris, jr., American consul. Received October 8, 1918.

"This seed was obtained in the semitropical region of the State of San Luis Potosi and is known simply as *chia*. It is the kind used in making the drink called *chia*." (*Ferris.*)

46646. CITRUS NOBILIS Lour. Rutaceæ.**King orange.**

From Kioto, Japan. Cuttings presented by Mr. H. Atherton Lee, Bureau of Plant Industry, United States Department of Agriculture. Received October 14, 1918.

"September 2, 1918. Bud sticks of the *Chu kaa* (Vermilion orange), a variety of *Citrus nobilis*. The fruits of the *Chu kaa* are smooth skinned, but easily peeled, as with the other mandarin varieties. The color is a light orange at the stem end, becoming a deeper orange, almost red, at the blossom end; flesh delicate with little or no rag; core very small. The shape is more nearly globose than that of most Mandarin varieties. The juice is as desirable in taste as that of any citrus fruit I have tasted. The fruit has few seeds, for the most part having no seeds or but one. One orange was found having three seeds. This variety is resistant to citrus canker. Should it be equally successful under conditions in the States as it is in Swatow it would easily rival the Washington navel, Valencia, and Satsuma in popularity." (*Lee.*)

46647. MERRILLIA CALOXYLON (Ridley) Swingle. Rutaceæ.*(Murraya caloxylon Ridley.)***Katinga.**

From Manila, Philippine Islands. Fruits presented by Mr. E. D. Merrill, botanist, Bureau of Science. Received October 15, 1918.

A medium-sized tree with pale flaky bark; native to Siam. The compound leaves are made up of 13 oblanceolate leaflets on a winged rachis. The pale yellowish green flowers are followed by yellow citronlike fruits, 4 inches in diameter, with a thick skin and green, tasteless flesh. The tree is known as the katinga; it is famous in the Malay region for its beautiful wood, which is light yellow with dark brown streaks, fairly hard, and takes a good polish. (Adapted from *The Journal of the States Branch, Royal Asiatic Society, vol. 50, p. 113.*)

46648 to 46659.

From Ecuador. Collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received October 18, 1918. Quoted notes by Dr. Rose.

46648. *PASSIFLORA LIGULARIS* JUSS. Passifloraceæ. Granadilla.

"No. 1. *Granadilla*. Common in the market of Guayaquil. Fruit orange-colored with a long stem. There are many species here; this is one of the best."

46649. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. Barley.

"No. 5. *Cebada*. Sold in the markets of Guayaquil. Also sold in cracked form. Said to have been brought from the highlands of Ecuador."

46650 to 46652. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

46650. "No. 6. *Chola* or *Frijoles colorados*. Brownish colored. From Guayaquil."

46651. "No. 7. *Caballero*. White. From Guayaquil."

46652. "No. 8. *Bayo*. Light gray. From Guayaquil."

46653. *ZEA MAYS* L. Poaceæ. Corn.

"No. 10. Three ears of corn from Guayaquil."

46654. *AMARANTHUS* sp. Amaranthaceæ. Amaranth.

"No. 11. Flowers, leaves, and stem dark purple. From Huigra."

46655 to 46657. *SOLANUM TUBEROSUM* L. Solanaceæ. Potato.

46655. "No. 12. Yellow potato."

46656. "No. 13. White skin; called *blanca*. From Guayaquil."

46657. "No. 14. Brown skin; called *leona* or *leona blanca*. From Guayaquil."

46658. *CHENOPODIUM QUINOA* Willd. Chenopodiaceæ. Quinoa.

"No. 26. A large pigweed extensively cultivated in the high plateaus of South America. The seeds are eaten, prepared in various ways. Quinoa presents many color variations in the plants, as well as in the seeds, especially in the direction of reds and purples. The colored seeds are used almost exclusively for making *chicha*, or native beer. The white seeds are preferred for eating. A possibility of utilizing the quinoa in the United States lies in its use as a breakfast food. Some pronounce it as good as oatmeal, and one resident Scotchman even insisted that it was better! From a crop standpoint, too, the plant appears rather promising, being very vigorous and productive. It is of erect habit, has a strong central stalk, and forms compact heads, heavy with seeds. There is no reason why it should not be gathered and thrashed by machinery." (O. F. Cook.)

For previous introduction, see S. P. I. No. 41340.

46659. *OXALIS TUBEROSA* Molina. Oxalidaceæ. Oca.

"No. 19. *Oca*. A plant related to our common sheep sorrel, widely cultivated in Peru and Bolivia for the sake of its fleshy rootstocks, which are an important article of food. Ocas are eaten raw, as well as cooked, and are also frozen and dried. Raw ocas, when first dug, have a distinctly acid taste, like sheep sorrel, but this is lost after the tubers have been exposed to the sun. The plant attains a height of 1 foot or more and has the general appearance of a large sheep sorrel. The flowers are yellow and the leaflets are folded at night or in wet weather, the same

46648 to 46659—Continued.

as in the sheep sorrel. The varieties are numerous, though much fewer than in the case of the potato. The tubers are very tender, crisp, and juicy. In form some are nearly cylindrical, while others are slender at the base and strongly thickened at the end. The colors vary from white or light pink through darker pinks or yellows to deep purplish red. In addition to the pleasing coloration, the surface of the tubers is smooth and clear, so that the general appearance is very attractive. If the taste should prove acceptable, oca's might become very popular for salads and pickles. The nature and habits of the plant indicate that it may be adapted to acid soil, which would be a distinct advantage in some parts of the United States." (*O. F. Cook.*)

For previous introduction, see S. P. I. No. 41168.

46660. LILIUM COLUMBIANUM Hanson. Liliaceæ.**Lily.**

From Bellingham, Wash. Collected by Dr. David Griffiths, Bureau of Plant Industry. Received October 18, 1918.

"A valuable native lily of the northern Pacific coast region, growing under very variable conditions from northern California to far into Canada. Locally it is called tiger lily, but it is very different and can be readily distinguished from that species by an entire lack of stem bulblets. The species produces abundant seed, which germinates readily. This seed was collected near Bellingham, Wash., in September, 1918." (*Griffiths.*)

46661. CASIMIROA EDULIS La Llave. Rutaceæ.**White sapote.**

From Altadena, Calif. Purchased from Mr. F. O. Popenoe, West India Gardens. Received October 19, 1918.

A large tree with palmately compound leaves of three to seven leaflets and small greenish yellow flowers. The fruit, about the size of an orange, is greenish yellow with a thick epicarp and usually has five seeds about an inch long. The fruit has a delicious flavor, somewhat suggesting that of a peach. It is used in Mexico as an aid in inducing sleep. (Adapted from *Bailey, Standard Cyclo-pedia of Horticulture, vol. 2, p. 680.*)

46662 to 46693.

From China, Japan, and Africa. Presented by Rev. G. D. Schlosser, Honan, China. Received October 1, 1918. Quoted notes by Mr. Schlosser.

46662 and 46663. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

46662. "From Chikung, China."

46663. "From South Honan, China."

For previous introduction, see S. P. I., No. 45588.

46664. ALLIUM CEPA L. Liliaceæ.

"Onion."

46665. ALLIUM sp. Liliaceæ.

Onion.

"Chin ts'ai."

46666 to 46668. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ.

Pai ts'ai.

46666. "Chinese small or leaf cabbage from Honan, China."

46667. "Large long-headed Chinese cabbage seed from Honan, China; collected in the spring of 1918."

46668. "Chinese cabbage seed from Honan, China."

46662 to 46693—Continued.

46669. *CARTHAMUS TINCTORIUS* L. Asteraceæ.

"Chinese red dye plant. Also Chinese medicine; probably red saffron."

46670 to 46674. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

"Excellent varieties of Chinese muskmelon."

46675. *EREMOCHLOA OPHIUROIDES* (Munro) Hack. Poaceæ. Grass.

"Grass seed from Honan, China."

46676 to 46678. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

46676. "White *kaoliang*. A tall grain similar to kafir corn."

46677. "Red *kaoliang*. From Honan, China."

46678. A red variety, slightly darker than S. P. I. No. 46677.

46679. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ. Adzuki bean.

"A short, thick, red variety of the adzuki bean."

46680. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

"A green variety of the mung bean, or green gram."

46681. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.

"Natal gooseberry or ground cherry; tart, but excellent for sauce. From Natal, South Africa."

46682. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"Japanese peas. Cargoes of these are shipped to Seattle."

46683. *POLYGONUM TINCTORIUM* Lour. Polygonaceæ.

"*Lao lan*. Blue dye plant from Honan, China."

46684. *PYRUS* sp. Malaceæ. Pear.

"Wild pear seed; *tang li*; from Honan and northern Hupeh, China. Blight resistant."

46685. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"Castor-bean seed from Honan, China."

46686. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame.
(*S. indicum* L.)

"A black-seeded variety of Chinese sesame."

46687 to 46691. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.

46687. "Seeds flat, light yellow."

46688. "Seeds round, green."

46689. "Seeds small, flat, yellowish green."

46690. "Seeds small, flat, black."

46691. "Seeds large, round, black. The Japanese export much of this variety to Seattle."

46692 and 46693. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"Used by the Chinese as green string beans."

46692. "A small white variety of cowpea."

46693. "A mixture of several dark-colored varieties."

46694. *PRUNUS MUME* Sieb. and Zucc. Amygdalaceæ.

Japanese apricot.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received October 19, 1918.

"The flesh of the fruits dissolved in tea is used for washing inflamed eyelids or when eyes get gummy; the acidity kills microbacteria." (*Iida.*)

"Although every American artist who visits Japan in the early spring comes away with the keenest appreciation of the remarkable beauty and picturesque character of the so-called 'flowering plums' of Japan, few of these artists appear to know anything about the fruit which is borne by these beautiful flowering trees. These fruits, which are properly classed by botanists with the apricots instead of with the plums, constitute a most unique food of the Japanese. Though sometimes eaten fresh, much as we eat our native American plums, they are usually pickled in brine and colored with leaves of the perilla plant and packed in boxes or other receptacles for household use. Great quantities of these pickled mumes are consumed in Japan. Their use is so common that they formed an important part of the army ration in the Russo-Japanese war, and it is said that they were often depended on to quench the thirst of the soldiers when on long marches. One's first impression of these Japanese pickles may be properly compared with one's first impression of the Spanish pickled green olive, which has now become so popular. Eaten with meats, they furnish an entirely new and appetizing flavor, one which, perhaps, is destined to become popular in America, certainly one which deserves our investigation. The trees are very hardy, and there are a great many varieties; when in flower they are very beautiful. Our horticulturists should study them." (*David Fairchild.*)

For an illustration of the flowers of the "mume," see Plate I.

46695. *BAILLONELLA TOXISPERMA* Pierre. Sapotaceæ.

Djave.

From Africa. Presented by Dr. F. Heim, Paris, France. Received October 19, 1918.

"Seeds from the Kongo, Africa; they are introduced into Europe for the first time." (*Heim.*)

A tree often 150 feet high, with a trunk diameter of 6 feet, and without branches for 75 to 90 feet. The wood is red, very compact, but easily worked. It is exported to Europe, where it is used for making railway coaches. The deeply ridged bark when wounded yields a glutinous white latex. The fruits are globular, about 3 inches in diameter, and contain one to three seeds from which the natives extract a fat. (Adapted from *Chevalier, Les Vegetaux Utiles de l'Afrique Tropicale Française*, vol. 9, p. 242.)

46696. *JACARATIA MEXICANA* A. DC. Papayaceæ.

Bonete.

From Yucatan. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica, Santiago de las Vegas, Cuba. Received October 22, 1918.

"Seeds of bonete from Yucatan. It produces edible fruits of a shape and taste much like *Carica papaya*. The bonete plant lives longer than the *papaya*." (*Calvino.*)

"A remarkable tree belonging to the same family as *Carica papaya*, but growing to a much greater size. The fruit, which is commonly called 'bonete' in



A FLOWERING BRANCH OF THE JAPANESE APRICOT. (PRUNUS MUME SIEB. AND ZUCC., S. P. I. No. 46694.)

The flowering mume of Japan, often called erroneously the "flowering plum," is a distinct oriental species of apricot. It is considered by many Japanese artists more beautiful even than the flowering cherry, having a picturesque quality in its branching habit which makes it peculiarly adapted for portrayal on screens, etc. It flowers very early, and its fragrant blooms are often caught by late snowfalls. Its fruits are extremely acid and are pickled in Japan and candied in China. They form an important part of the Japanese soldier's ration and when served with meats are an appetizing relish. The tree is hardy, appears to be resistant to crown-gall and to the American peach borer, and deserves study as a stock. (Photographed, somewhat enlarged, by E. L. Crandall at Dr. Fairchild's place, "In the Woods," North Chevy Chase, Md., March 26, 1921; P26881 FS.)



FRUITS OF THE ILAMA, ONE OF THE CUSTARD-APPLES. (ANNONA DIVERSIFOLIA SAFFORD, S. P. I. No. 46781.)
The ilama, or papauce, as it is called in the State of Chiapas, can be termed the cherimoya of the tropical lowlands, for it is almost equal to the cherimoya in character and quality, yet it succeeds in the lowlands where the cherimoya can not be grown. (Photographed by Wilson Popenoe, Tapachula, Chiapas, Mexico, July 2, 1918; P17151FS)

tropical Mexico, is of a peculiar shape; oblong, pentagonal, five celled, containing a milky pulp. It is somewhat sweet and edible, in many places being prepared with sugar in the form of conserves. The leaves are compound and digitate, composed of seven distinct acute lobes." (W. E. Safford.)

46697. LIVISTONA JENKINSIANA Griffith. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Garden.

Received October 25, 1918.

Seeds of an East Indian palm, 20 to 30 feet tall, with a thick, round crown. The leaves are used for covering tops of boats and umbrellas.

For previous introduction and description, see S. P. I. No. 45591.

46698 to 46703.

From Jamaica Plain, Mass. Seeds collected at the Arnold Arboretum by Dr. Walter Van Fleet, of the Bureau of Plant Industry. Received October 28, 1918. Quoted notes by Dr. Van Fleet, except as otherwise stated.

46698. × MALUS ARNOLDIANA Rehder. Malaceæ. Apple.

"Hybrid of *Malus pulcherrima*, grown at the Arnold Arboretum; vigorous and very fruitful. May be useful as a stock for dwarfing commercial varieties of apples and for variety breeding."

Attention has been called to the hybrid crab apple, *Malus cerasifera*. This plant is probably one of the parents of another hybrid which sprang up spontaneously in the Arboretum many years ago and has been called *M. arnoldiana*. The other parent is probably *M. floribunda* [*M. pulcherrima*], itself believed to be a hybrid which originated in China. If this view of the origin of *M. arnoldiana* is correct, it is the offspring of two hybrids of different parentage and is a good illustration of what can be obtained by crossing and recrossing the crab apples. It is a low, broad, bushy tree with long, arching upper branches which are raised well above the general head of the plant and are wonderful objects when clothed from end to end with flowers and the blue sky is seen between. The flower buds, like those of *M. floribunda*, are of deep rose color and the petals, after the flowers open, gradually turn from rose color to white. The flowers, however, are as large as those of *M. cerasifera*, or nearly twice as large as those of *M. floribunda*, and the red fruits are intermediate in size between those of the parents. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, May 16, 1918.)

46699 and 46700. MALUS PRUNIFOLIA RINKI (Koidz.) Rehder. Malaceæ.

Apple.

46699. "Fruits from the best trees of this variety in the Arboretum.

Fruits are of quite large size and good quality. Tree healthy and vigorous. For breeding and stock trials."

46700. "Handsome variety formerly considered a form of the Siberian crab, *M. baccata*, but considered by Prof. Sargent as being much nearer to *M. prunifolia rinki*. Good-sized fruits of fine quality. For breeding and stock trials."

46701. MALUS TRANSITORIA TORINGOIDES Rehder. Malaceæ. Apple.

"A large and vigorous variety of *M. transitoria*, with good-sized astringent fruits. For breeding purposes."

46698 to 46703—Continued.

46702. *PYRUS SEROTINA* Rehder. Malaceæ.

Pear.

"The typical form of the species usually known as *P. chinensis*. Parent of the varieties *Golden Russet*, Chinese sand pear, *LeConte*, and others. Useful as a resistant stock and for breeding."

46703. *PYRUS SERRULATA* Rehder. Malaceæ.

Pear.

"Tree grown from seeds received from China. Vigorous and possibly resistant to blight. Fruits small, late ripening, and barely edible. Of possible value as a stock for nonresistant pears and for breeding new varieties."

46704 to 46707.

From Los Banos, Philippine Islands. Presented by Mr. C. F. Baker, dean, College of Agriculture. Received October 29, 1918. Quoted notes by Mr. Baker.

46704. *ANTIDESMA BUNIUS* (L.) Spreng. Euphorbiaceæ.

"*Bignay*. Collected on the college farm."

A small evergreen tree, found in India, the Malay Archipelago, and China, with glabrous leaves and pubescent spikes of small flowers. The very juicy red fruits turn black when ripe, and are about a third of an inch in diameter. The bark of this tree yields a fiber from which rope is made, and the leaves are used as a remedy for snake bites. The wood, when immersed in water, becomes black and as heavy as iron. The fruits are subacid in taste and are used for preserving. (Adapted from *Brandis, Indian Trees*, p. 564, and from *Lindley, Treasury of Botany*, vol. 1, p. 75.)

For previous introduction, see S. P. I. No. 43544.

46705. *CORDIA BLANCOI* Vidal. Boraginaceæ.

Anonang.

"*Anonang*. Collected on the college farm."

A medium-sized tree generally with a short and irregular trunk. The wood is soft and light and easily worked. It is clear yellow when first cut, changing to grayish brown. While not very durable, it is not attacked by pinhole beetles and is useful for posts and in light construction. The bast is used for making ropes. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 205.)

46706. *PREMNA CUMINGIANA* Schauer. Verbenaceæ.

"*Maguilio*. Collected on the college farm."

A Philippine shrub with stellate-pubescent, ovate, cordate leaves 9 inches long and ample pyramidal panicles of small flowers followed by fruits the size of a pea. (Adapted from *DeCandolle, Prodrromus*, vol. 11, p. 634.)

46707. *QUERCUS BENNETTII* Miquel. Fagaceæ.

Oak.

"*Cateban*. Collected on Mount Maquiling."

One of the largest of the Philippine oaks, reaching a diameter of more than 2 feet. The wood is moderately hard, heavy, pale yellowish brown, and has a fine texture. It seasons well if carefully stacked, but otherwise it is liable to split and warp. Useful for posts, beams, joists, rafters, and tool handles. (Adapted from *Schneider, Commercial Woods of the Philippines*, p. 98.)

46708 to 46710.

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received October 30, 1918. Quoted notes by Mr. Curran.

46708. *SYAGRUS CORONATA* (Mart.) Becc. Phœnicaceæ. **Palm.**
(*Cocos coronata* Mart.)

"Seeds of *Licori* palm, Jequie, Bahia, Brazil, September, 1918. A small, ornamental palm of dry, cool highlands. It yields edible kernels and oil in immense quantities."

46709. *FEVILLEA* sp. Cucurbitaceæ.

"Seeds of *andiroba* used for soap making; Rio Grungugy, Bahia, Brazil, September, 1918."

46710. *ZEPHYRANTHES* sp. Amaryllidaceæ.

"Jequie, Bahia, September, 1918. Bulbs of an ornamental pink flower, from 12 to 14 inches high. Flowers 4 to 6 inches long, four or five at apex of scape. Wild in dry, cool highlands in good woods mold."

46711. *BERBERIS PRUINOSA* Franch. Berberidaceæ. **Barberry.**

From San Rafael, Calif. Presented by Mr. R. H. Menzies. Received October 31, 1918.

"This barberry is one of the handsomest of the seventy-odd species I have under cultivation. It is the first to flower, the large clear yellow flowers being very showy. The white, powdery berries are borne profusely and are carried through the winter, a few remaining on the plant along with the next season's flowers. While an evergreen in California, it will probably be deciduous in the East; the foliage becomes very handsomely colored in the fall. I know of no barberry that puts on a greater growth almost from the start; my plant throws out new shoots each year all the way from 5 to 6½ feet from the base." (*Menzies.*)

46712. *ARTEMISIA CINA* Berg. Asteraceæ. **Wormseed.**

Grown from S. P. I. No. 42791 at the Plant Introduction Field Station, Chico, Calif. Received November 4, 1918.

Numbered for convenience in recording distribution.

The plant is a low and straggly undershrub, with erect branches, abounding in the deserts of Turkestan, where all the drug *santonica* is collected in July and August by natives. The drug is composed of the dried, unexpanded flower heads and it forms a greenish brown, glossy mass, having a strong, somewhat camphoraceous odor and a bitter taste. It is used as an anthelmintic, especially for roundworms.

For previous introduction, see S. P. I. Nos. 42682 and 42791.

46713. *CHENOPODIUM NUTTALLIAE* Safford. Chenopodiaceæ.
Huauhtzontli.

From City of Mexico, Mexico. Purchased by Mrs. Zelia Nuttall. Received October 31, 1918.

"Seeds of the black variety which the agriculturists of Xochimilco consider the best." (*Mrs. Nuttall.*)

For previous introduction, see S. P. I. No. 46632.

46714 to 46716.

From Pretoria, South Africa. Presented by Mr. E. Percy Phillips, for the chief of the division of botany, Department of Agriculture. Received November 5, 1918. Quoted notes by Mr. Phillips.

46714 and 46715. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

46714. "A. Sweet variety."

46715. "B. The wild melon and may be a bitter variety."

46716. LAGENARIA VULGARIS Seringe. Cucurbitaceæ.

Gourd.

"C. The Kafir melon."

46717. GOSSYPIUM NANKING Meyen. Malvaceæ.

Cotton.

From Honan, China. Presented by Mr. G. D. Schlosser. Received October 1, 1918.

"The Chinese cotton is generally recognized as being inferior to the American. Whether it may have some superiority in the matter of adaptability to poorer soils I am unable to say. My friends here say they do not plant cotton on land that will grow anything else. The fiber is used for spinning in the hand fashion. The native cloth is all woven of this cotton." (Rev. H. W. White.)

For previous introduction, see S. P. J. Nos. 33798 and 33799.

46718. PYRUS sp. Malaceæ.

Pear.

From China. Seeds taken from fruits collected by Mr. Frank N. Meyer and forwarded to the Office of Foreign Seed and Plant Introduction after his death, without any notes. Received October 5, 1918.

46719. SCHRANKIA LEPTOCARPA DC. Mimosaceæ.

From Bahia, Brazil. Presented by Sr. V. A. Argollo Ferrão. Received November 5, 1918.

"Seeds of a wild sensitive plant that might be good for pasture for goats and sheep. It is a strong-growing small shrub, with the spines very much reduced, as compared with those of the common sensitive plant. The seeds are protected by a spiny fruit. The plant is not easily found, as the cattle eat it back closely. It grows in good soil and is found in low ground near rivers and small streams." (Argollo Ferrão.)

46720. ZIZIPHUS MAURITIANA Lam. Rhamnaceæ. Indian jujube.
(*Z. jujuba* Lam. not Mill.)

From Reunion Island. Presented by Mr. G. Regnard, Port Louis, Mauritius. Received November 5, 1918.

"Ziziphus from Reunion Island. This jujube is very sweet and is highly prized." (Regnard.)

For previous introductions, see S. P. I. Nos. 45625 to 45658.

46721 to 46724.

From Medellin, Colombia. Presented by Mr. W. O. Wolcott. Received November 8, 1918. Quoted notes by Mr. Wolcott.

46721 to 46724—Continued.

46721. *CEREUS* sp. Cactaceæ. Night-blooming cereus.

"The flat joints are from a species of night-blooming cereus which has an immense blood-red flower the size of a saucer. It opens only at night; the plant climbs on walls, or anything."

46722 and 46723. *CEREUS* sp. Cactaceæ. Pitalla.

"The seeds and the 3-cornered joints are from a cactus called *pitalla* (pronounced pea-tah-ya). The fruit grows as large as a good-sized potato and is covered with warts about one-fourth of an inch high. The inside pulp has a wonderful flavor and is very fine eating."

46722. Cuttings.

46723. Seeds.

46724. *PERSEA AMERICANA* Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

"Seeds from some very large and fine *aguacates*."

46725. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.

From Cuba. Presented by Dr. Mario Calvino, director of the Agricultural Experiment Station, Santiago de las Vegas. Received November 8, 1918.

"Seeds of the *ramon de mejico*. It is a fine shade tree; and it is also an economic plant, for its leaves are eaten by cattle and its seeds are eaten readily by pigs."

For previous introduction, see S. P. I. No. 41880.

46726. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

Grown at the Plant Introduction Field Station, Chico, Calif. Numbered for convenience in recording distribution. Received November 8, 1918.

"Seeds of an Armenian melon. It is a good bearer, and the fruits weigh from 15 to 20 pounds. The skin is rough, and greenish yellow in color. The flesh is white, solid, and firm, and very sweet. No doubt it would make a good keeper for late use." (*R. L. Beagles*.)

46727. MILLETTIA PISCIDIA (Roxb.) Wight. Fabaceæ.

From India. Presented by Mr. H. G. Carter, economic botanist of the Botanical Survey of India, Indian Museum, Calcutta. Received November 11, 1918.

"Pods and seeds of *Sohrumthein* collected by the Agricultural Inspector of Dhasi and Jaintia and Garo Hills, Shillong, Assam." (*Carter*.)

This woody climber, with whitish branchlets and odd-pinnate leaves, is a native of the forests of India, growing up to an altitude of 4,000 feet. The ovate-oblong, coriaceous leaflets are 3 to 4 inches long, and the snow-white flowers are borne in copious, laxly flowered racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 107.)

46728 and 46729.

From Peking, China. Presented by Dr. Yamei Kin, who obtained them from Mr. H. L. Yang, Peking University. Received November 12, 1918. Quoted notes by Mrs. Kin.

46728. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

"Seeds of a small white melon that is very prolific and has a fine-textured flesh, though not so highly flavored as the Honey Dew."

46728 and 46729—Continued.

46729. *DOLICHOS LABLAB* L. Fabaceæ.

"Seeds of the Manchurian green bean, which goes by the name of 'old woman's ear,' probably because it is very much broader and flatter than the usual string bean. It is noted for its late-maturing qualities, not being ready till the latter part of August and getting better with the cool autumn till the hard frost kills it. It also makes a delicious salt pickle and I imagine might be good for the salt-preserving method advocated by the United States Department of Agriculture. The bean itself is also eaten, but they say it is better green with the pod, like a string bean."

46730 and 46731.

From Tucuman, Argentina. Presented by Mr. E. F. Schultz, horticulturist. Agricultural Experiment Station. Received November 13, 1918.

46730. *SOLANUM* sp. Solanaceæ.

Potato.

"Tubers of the *oca* wild potato. Although I do not think that this potato will be able to compete with the common cultivated potato, it may prove useful in some places, such as the high mountain ranges in California, as well as some parts of the Hawaiian Islands and the Philippines." (Schultz.)

46731. *TILLANDSIA* sp. Bromeliaceæ.

"A small package of seed of one of the largest of the local tillandsias. I obtained them in the forest about 50 kilometers to the northeast of Tucuman." (Schultz.)

46732 to 46740.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received November 13, 1918. Quoted notes by Mr. Wester.

46732. *CITRUS MIARAY* Wester. Rutaceæ.

Miaray..

"With its willowy, slender, drooping branches and dense crown of dark-green foliage, the *miaray* is an exceedingly handsome ornamental tree. The fruit is about the size of a lime, usually growing singly in the axils of the leaves. It is pleasantly acid and may be used like the lime. The clean, vigorous growth of the tree indicates that it is likely to prove a desirable stock for other cultivated varieties of citrus fruits."

46733. *CITRUS WEBBERII* Wester. Rutaceæ.

Alsem.

"*Calpi*. A shrubby tree with small, sharp spines. It has oblong-ovate, shining, dark-green leaves and solitary, sweet-scented, white flowers. The oblate fruits, 2 inches long by 2½ inches wide, are lemon yellow and have a thin skin, often loose like a mandarin orange. The flesh is whitish to grayish, very juicy and aromatic, with less rag than perhaps any other citrus fruit ever examined by the writer. The trees have a long flowering season, as fruits are offered in Manila throughout the summer to late in autumn."

46734. *COIX LACRYMA-JOBI* MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

"*Adlay*. An edible variety of Job's-tears, cultivated in Mindanao."

46735. *CROTALARIA* sp. Fabaceæ.

"An annual plant up to 75 centimeters tall, with curious, rather attractive sepals that persist for many weeks. An interesting subject for a

46732 to 46740—Continued.

plant breeder of ornamentals. Native to Mindanao at an altitude of 400 to 700 meters."

46736. FICUS sp. Moraceæ.

"*Kalaput*. A small tree, used for live fence posts in Bukidnon, Mindanao, at an altitude of 400 to 700 meters. The fruits, which are bright red and about the size of small cherries, are produced in great profusion in the axils of the leaves and remain on the tree a long time, making this a very handsome ornamental. Likely to thrive in the very mild regions of the United States."

46737. IPOMOEA NYMPHAEFOLIA Blume. Convolvulaceæ. Morning-glory.

"*Burakan*. A perennial, climbing vine of vigorous growth which is bronze colored when young. It has very large leaves, sometimes exceeding 20 centimeters in width, and white flowers. The vine is used for basketry and in southern Florida would make a good ornamental. It is a native of Mindanao up to an altitude of 650 meters."

46738. ORANIA PALINDAN (Blanco) Merr. Phœnicaceæ. Palm.

"*Banga*. A tall, unarmed palm, native to the interior of Bukidnon, Mindanao, growing at altitudes ranging from 300 to sometimes exceeding 500 meters. The trunk is straight and remarkably uniform in diameter, this rarely exceeding 18 centimeters. The leaves are pinnate and silvery beneath. The trunk of the mature palm is straight grained, easily split, and durable, and is used by the natives in making floors, fences, etc. An attractive ornamental."

46739. TRICHOSANTHES sp. Cucurbitaceæ.

"No. 1. A cucurbitaceous climbing vine with attractive foliage and roundish oblong fruits somewhat larger than a goose egg. The bright-red color of the fruits is retained for several weeks and is highly decorative. Found at an altitude of about 600 meters in the interior of Mindanao."

46740. TRICHOSANTHES sp. Cucurbitaceæ.

"No. 2. A cucurbitaceous climbing vine with attractive white flowers and oblong, orange-red fruits about 5 centimeters long. Native to the interior of Mindanao."

46741. AMYGDALUS MICROPHYLLA H. B. K. Amygdalaceæ.
(Prunus microphylla Hemsl.) **Mexican almond.**

From Indio, Calif. Fruits collected by Prof. S. C. Mason at the Indio Date Garden, grown from S. P. I. No. 39295. Received November 14, 1918.

The Mexican almond, found in the high mountain regions of Mexico, is a low, branching shrub with slender twigs without thorns. The leaves, usually less than 1 inch long, are narrowly elliptical to broadly lanceolate with crenate margins. The minute flowers, appearing before or with the leaves, are followed by densely rusty-pubescent oval fruits about half an inch long. The fruits are practically without flesh, and the thin dry skin splits open, exposing the stone. (Adapted from *Mason, Journal of Agricultural Research*, vol. 1, p. 175.)

46742 and 46743.

From Para, Brazil. Presented by Sr. J. Simao da Costa. Received November 14, 1918. Quoted notes by Sr. da Costa.

46742. CECROPIA PALMATA Willd. Moraceæ.

Yaruma.

"Seeds of what is called the trumpet tree, because it is hollow. It is a chronic harbor for ants and all sorts of pernicious insects. No experiments have been made as to the strength of the fiber which the bark contains."

46743. EUTERPE OLERACEA Mart. Phœnicaceæ.

Assahy.

"Seeds of a graceful, ornamental palm. The fruits contain hardly any oil and are made into a beverage and also into ice cream."

46744. ENTEROLOBIUM sp. Mimosaceæ.

From Bahia, Brazil. Presented by Mr. H. M. Curran. Received November 14, 1918.

"Seeds of a species of *Enterolobium* much like *E. saman*, but from dry regions. It is a handsome umbrella-shaped shade tree for Texas and California." (*Curran.*)

46745 to 46748. PYRUS spp. Malaceæ.

Pear.

From Jamaica Plain, Mass. Fruits collected at the Arnold Arboretum by Dr. W. Van Fleet, of the United States Department of Agriculture. Received November 15, 1918. Quoted notes by Dr. Van Fleet.

46745 to 46747. PYRUS CALLERYANA Decaisne.

46745. "Wilson No. 556a; pubescent form."

46746. "Wilson No. 556a; Bussey Hill."

46747. "Wilson No. 556a."

46748. PYRUS SERRULATA Rehder.

This species seems to be most closely related to *Pyrus serotina* Rehder. It differs, however, in its serrulate, generally broader leaves and in the smaller flowers with usually three or four styles and shorter petals, and in the smaller fruits. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 264.)

46749 to 46752.

From New Zealand. Presented by Mr. J. W. Poynton, Palmerston North. Received November 15, 1918. Quoted notes by Mr. Poynton.

46749. ENTELEA ARBORESCENS R. Br. Tiliaceæ.

New Zealand cork.

"Seeds of the *whaw* tree, the wood of which is but little more than half the weight of cork. Its distribution is very limited, as it is found only in isolated localities in the North Island and in one small area in the South Island. The seed vessels are very tough and are entirely surrounded by sharp needlelike spines which keep off birds and insects. The tree is very pretty, with a large, maplelike leaf and a pretty white flower. The leaves are evergreen. The tree grows to a height of 25 feet. It does not stand severe frosts, so should be sown only in the Southern States."

46749 to 46752—Continued.

46750 to 46752. PHORMIUM TENAX Forst. Liliaceæ. New Zealand flax.

"This seed is from a place called Wairoa, on the east coast of the North Island. It was collected for me by the manager of the largest flax mill there. Careful accounts were kept of the yield per ton of green leaf, and this seed is from the best plants, so it is of a fiber-producing strain."

46750. "From virgin plants not previously cut."

46751. "From plants after one cutting."

46752. "From plants cut more than once."

46753 to 46760.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira, technologist of the Estacion Agronomica, Montevideo. Received November 16, 1918. Quoted notes by Sr. Silveira.

46753 to 46756. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

46753. "Mani, variety *Brasil*."

46754. "Mani, variety *Brasil*."

46755. "Mani, variety *Paraguaya*."

46756. "Mani, variety *Uruguaya*."

46757 and 46758. HELIANTHUS ANNUUS L. Asteraceæ. Sunflower.

46757. "Variety *Argentina*." **46758.** "Variety *del Pais*."

46759 and 46760. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean

46759. "Variety *sanguineus*." **46760.** "Variety *communis*."

46761. CARICA sp. Papayaceæ. Papaya.

From Colombia. Presented by Dr. Carlos Urueta, minister of agriculture, Bogota. Received November 19, 1918.

"A wild variety of papaw from the tropical parts of Colombia." (*Urueta*.)

Judging from the seeds, this is the same species as that obtained by Mr. O. F. Cook at Ollantaytambo, Peru. See S. P. I. No. 41339.

46762. LYSILOMA SABICU Benth. Mimosaceæ. Sabicu.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received November 22, 1918.

The *sabicu* is a Cuban tree with twice-pinnate leaves composed of small, obliquely obovate leaflets. The flowers are in small, globular heads and the fruits are thin, flat pods. The tree is of great value for its dark-colored wood, which is very heavy and extremely hard and durable, making it valuable in ship-building. (Adapted from *Lindley, Treasury of Botany*, p. 704.)

46763. RHODODENDRON sp. Ericaceæ. Rhododendron.

From Jamaica Plain, Mass. Presented by the Arnold Arboretum. Received November 25, 1918.

Seeds of an apparently new species of *Rhododendron* collected by Mr. Forrest (No. 15977).

46764. CORYNOCARPUS LAEVIGATA Forst. Corynocarpaceæ.**Karaka.**

From Honolulu, Hawaii. Presented by Mr. C. S. Judd, Superintendent of Forestry, Board of Commissioners of Agriculture and Forestry. Received November 25, 1918.

"Seeds of the *karaka* tree of New Zealand. This tree was introduced into these islands in 1878, when Mr. Francis Sinclair sent the seed of it from Auckland to Mrs. Valdemar Knudsen, who planted it at Halemanu, Kauai, Hawaii, at an altitude of 3,500 feet. The tree has thrived and forms a dense forest cover. It is considered a valuable addition to our list of water-conservation forest trees. The tree is not very long lived, but it perpetuates itself by abundant reproduction. The wood is soft and the foliage is relished by stock." (Judd.)

46765. RUBUS sp. Rosaceæ.**Blackberry.**

From San Lorenzo, Colombia. Presented by Mr. M. T. Dawe. Received November 11, 1918.

"I am sending you to-day seeds of a large fruiting blackberry which grows at about 3,300 meters altitude on the Central Cordillera." (Dawe.)

Received as *R. bogotensis*, but it seems to be a different species.

46766 and 46767. TRITICUM spp. Poaceæ.**Wheat.**

From Johannesburg, South Africa. Purchased from the Agricultural Supply Association through Mr. J. Burt Davy. Received November 28, 1918. Quoted notes by Mr. Davy.

"I have succeeded in obtaining in the Calvinia division of the Cape Province some very nice samples of two breeds of wheat, which have been grown there for a generation or more and which must be thoroughly acclimatized.

"The two varieties are known locally as *Golden Ball*, which is a durum type, and *Oude Baard*, a bearded, soft wheat. Both are good yielders, and the latter is said to be somewhat better in yield than the former, although somewhat less drought resisting.

"These wheats are grown in a region where the average rainfall for the last five years has been $3\frac{1}{4}$ inches per annum, and the incidence of the rainfall is such that it is practically of no benefit to the crop. On the other hand, the soil temperature is extraordinarily high and the evaporation enormous, somewhere in the neighborhood of 108 inches per annum.

"The wheat is grown under what is known as the 'Zaaidam' system, which is identical with the basin-irrigation system of Upper Egypt. with this difference, that whereas the Egyptian plan deals with practically a constant water supply, the Zak River is very erratic in its flow, sometimes coming down in February and at other times, perhaps, in March, April, May, or June, and sometimes even as late as August or September. As a rule one can only count upon its coming down once in the year or at least being only once available for the crop during the season, though occasionally, in an exceptionally favorable season, the crop gets two irrigations.

"The land, being extraordinarily hard, is not plowed until the river comes down; the water is then allowed to stand on the land, in basins sometimes 1,500 acres in extent, for two to ten days, or even three weeks, according to the quantity of water available and the requirements lower down the stream. Storage-

is effected by means of dams, sometimes 2 miles in length, thrown right across the river valley. By this means the soil is soaked to a depth of 6 feet or more. The water is then run off into the next dam, and as soon as the surface is dry enough the land is plowed and the seed is sown broadcast and harrowed in. The rest is left to nature.

"There is a good deal of brack in these soils (both sodium carbonate and sodium chlorid). On this account there is a possibility of the strains I am sending you being more alkali resistant than might otherwise be the case, but I have no actual proof that this is so. Under the circumstances, these wheats are grown with almost a minimum of moisture which would support a crop and, I think, should be suitable for cultivation in parts of the United States.

"It is, of course, possible that you will find that they correspond closely with types already grown in the United States, but as they are among the oldest types of wheat known in South Africa, they may have developed local peculiarities quite different from any possessed by your American wheats."

46766. TRITICUM DURUM Desf.

"*Golden Ball*. A durum wheat; not so good a yielder as *Oude Baard*, but more drought resistant."

46767. TRITICUM AESTIVUM L.

(*T. vulgare* Vill.)

"*Oude Baard*. A bearded, soft wheat; a better yielder than the *Golden Ball*, but not so drought resistant."

46768. DIOSCOREA ALATA L. Dioscoreaceæ.

Yam.

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, horticulturist, Agricultural Experiment Station. Received November 27, 1918.

"The exact identity of this variety I am not able to state. It is beginning to be cultivated here under the name of Chinese yam." (*Higgins*.)

"A purple-skinned, somewhat dark-fleshed yam. When peeled, boiled, and mashed, seasoned with butter, and thoroughly beaten, this yam is much like mashed potato and is equally palatable. It is very smooth in texture when so prepared. It is also good when baked or when sliced and fried after baking or boiling. Like most other yams it should be peeled before boiling." (*R. A. Young*.)

46769. ANANAS SATIVUS Schult. f. Bromeliaceæ.

Pineapple.

From Berea, Africa. Presented by Mr. H. Rutter, acting curator, Municipal Botanic Gardens. Received November 1, 1916. Numbered December, 1918.

"Suckers of the Natal variety of pineapple, known locally as the Queen pine." (*Rutter*.)

"This pineapple is of delicious flavor. It averages from three-fourths of a pound for poor specimens to 3 or 4 pounds for choice ones." (*Daily Consular and Trade Reports, January 13, 1914*.)

46770 to 46780.

From Canton, China. Presented by Mr. G. Weidman Groff, Canton Christian College. Received November 26, 1918. Quoted notes by Mr. Groff.

46770 to 46779.

"A collection of beans procured on the Canton markets."

46770 to 46780—Continued.

46770. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.

"No. 15036A. *Haak pei tseng tau*. One of the common beans of Kwangtung; said to be very nutritious. Planted in Kwangtung in March and April and again in August and September."

46771. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"No. 15036B. *Mei tau*. Another common bean of Kwangtung; planted in March and April."

46772. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"No. 15036C. *Hohlaan tau*. A variety of pea grown widely in Kwangtung; said to have come originally from Holland, and for this reason called *Hohlaan tau*. The Chinese usually eat this pea with the pod, and it is highly prized by foreigners. It is planted in Kwangtung in October, November, and December."

46773. *CANAVALI GLADIATUM* (Jacq.) DC. Fabaceæ. Sword bean.

"No. 15036D. *To tau*. - A very prolific vine, sometimes used as an arbor. The beans are edible, though the pods are large and tough. It is planted in Kwangtung in March and April."

46774. *VIGNA SESQUIPEDALIS* (L.) Fruwirth. Fabaceæ.

Yard Long bean.

"No. 15036E. *Haak tau*. A common bean of Kwangtung with edible seeds. It is planted in March and April and again in August and September."

46775. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

"No. 15036F. *Luk tau*. Used for bean sprouts, bean curd, etc. Also used in flour. Planted in Kwangtung in March and April."

46776. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.

"No. 15036G. *Wong tau*. Used to make various bean products. Planted in Kwangtung in March and April."

46777. *VICIA FABA* L. Fabaceæ. Broad bean.

"15036H. *Chaaam tau*. So called because it resembles a silkworm. It is used in a number of different ways and is planted in March and April."

46778. *VIGNA SESQUIPEDALIS* (L.) Fruwirth. Fabaceæ.

Yard Long bean.

"No. 15036I. *Tseng tau*. Used in various bean products and commonly grown in the north; planted in Kwangtung in March and April."

46779. *PHASEOLUS ANGULARIS* (Willd.) W. F. Wight. Fabaceæ.

Adsuki bean.

"No. 15036J. *Hung tau*. Planted in Kwangtung in March and April."

46780. *CASTANEA MOLLISSIMA* Blume. Fagaceæ. Chestnut.

"When I was up the North River in March near Wushek I saw some fine specimens of chestnut. Through Mr. S. D. Williams, of the railway, I have now obtained a few of these nuts which I am sending under C. P. B. No. 15037."

46781 to 46787.

From Mexico. Collected by Mr. Wilson Popenoe and presented through Dr. H. J. Webber, director of the Citrus Experiment Station of the University of California. Received December 2, 1918. Quoted notes by Mr. Popenoe.

46781. *ANNONA DIVERSIFOLIA* Safford. Annonaceæ.

Ilama.

"*Papauce*. Collected at Tapachula, Chiapas, October 18, 1918. The tree strongly suggests *Annona squamosa* in appearance, but is easily distinguished by the leaflike bracts at the base of the branchlets. The fruit is much larger than that of *A. squamosa*, resembling more closely that of *A. reticulata*. It is generally heart shaped, up to 5 or 6 inches in length, with the carpellary areas indicated by incised lines on the surface, which is pale glaucous green in color. The skin is nearly a quarter of an inch thick, the flesh is said to be tinged with rose color when ripe, and the seeds are much larger than those of either *A. squamosa* or *A. reticulata*."

For previous introduction, see S. P. I. No. 36632.

For an illustration of the fruits of this *Annona*, see Plate II.

46782. *CARICA* sp. Papayaceæ.

"Collected at La Zacualpa, Chiapas, October 10, 1918. A wild carica common in this region. It is very similar to the papaya. The plants grow to a height of about 10 feet and resemble those of the papaya except in the distinctly darker color of the foliage and the less deeply lobed leaves. Staminate and pistillate flowers seem always to be produced on separate plants. The fruits are borne singly, not in clusters, as is often the case in the wild papayas of Florida. They are obovoid-elliptic in shape, 2 to 4 inches in length, orange-yellow in color when ripe, with a more pronounced aroma than in the papaya. The natives call them *melocotones*, or peaches. The flesh is about half an inch thick; each of the numerous seeds which fill the large cavity is inclosed in a translucent, whitish aril, which is the part eaten. The seeds do not adhere to the wall of the seed cavity, as in the papaya, but together with the arils surrounding them entirely fill the cavity. The flavor of the arils is sweet and aromatic, very pleasant, and quite distinct from that of the flesh of the papaya."

46783. *CHAMAEDOREA* sp. Phœnicaceæ.

Palm.

"From Pochutla, Oaxaca, August 18, 1918. This closely resembles the dwarf palm which I sent in from Guatemala last year under the name *pacayito*. It is abundant on cool, shady mountain sides in the coffee district above Pochutla, at altitudes of about 3,000 feet. When mature, the plant has a slender trunk, perhaps half an inch thick and 2 feet high. The leaves are 12 to 18 inches in length, rather finely pinnate, deep green, graceful, with the rachis stiff but arching slightly. As a house plant for the Northern States and for use in fern dishes it seems to me this plant possesses unusual possibilities, and I strongly recommend it for trial."

46784. *NICOTIANA TABACUM* L. Solanaceæ.

Tobacco.

"From the cafetal El Progreso, near Pochutla, Oaxaca; altitude, 2,000 feet. Collected August 15, 1918. A pink-flowered tobacco plant, of the type grown in this section of the country. It reaches a height of about 6 feet. I do not know that it has any particular value, but it might be

46781 to 46787—Continued.

planted experimentally somewhere in the United States to determine whether or not it possesses any unusual characteristics."

46785. *PASSIFLORA CILIATA* Ait. Passifloraceæ.

"From Puerto Mexico, Vera Cruz; collected September 9, 1918. The granadita, a passion vine which grows upon the beach in the vicinity of Puerto Mexico. Its fruits are unusually handsome and are sold in the market. They are produced upon slender stems about 4 inches long, and are round, an inch in diameter or slightly larger, and brilliant crimson scarlet in color. They are by far the showiest fruits of this genus which I have seen. The outer covering of the fruit is not hard; the seeds are surrounded by white, translucent pulp of slightly acid flavor. In quality this species is inferior to *Passiflora ligularis*, the flavor not being so aromatic and spicy. For the beauty of its fruits alone, however, it should be worth cultivating, and it would be an excellent species to cross with some of the larger fruited passifloras."

46786. *SAPRANTHUS* sp. Annonaceæ.

"From the mountains near Pochutla, Oaxaca; altitude, 3,000 feet. Collected August 18, 1918. A peculiar annonaceous fruit, which is rather common in the mountains. The tree is tall and slender and grows in the dense forest. The fruits are the size and shape of papaws (*Asimina triloba*); that is, oblong, about 3 to 4 inches in length, and 1½ inches in thickness. The flesh is bright orange color, and I do not believe it is edible; at any rate, it is not eaten by the natives of this region."

For an illustration of a cluster of fruits of this tree, see Plate III.

46787. *VITIS* sp. Vitaceæ.

Grape.

"*Totoloche*. Collected at Mogone, Oaxaca, October 1, 1918. A wild grape apparently belonging to the Muscadine group or closely related to it. The plant is said to be abundant in this region, but I have not seen it. The fruit is brought into town by the Indian women from San Juan Guichicovi. This impresses me as the best grape I have ever seen in the tropical lowlands, and I believe it has value. It should, at least, be of importance in connection with the development of a grape for cultivation in the Tropics. It is vastly superior to *Vitis caribaea*, the berries being of much larger size and better flavor. The bunches are usually small and rather loose, but sometimes contain as many as 50 berries and are quite compact. The individual berries are half an inch in diameter, sometimes larger, round, deep purple-maroon or purple in color when fully ripe. The skin is thick and tough, like that of the Scuppernong; it seems to me even thicker and tougher. The pulp is greenish, very juicy, containing two to four seeds, typically the latter number. While the *totoloche* appears to be most commonly eaten out of hand, it is also used in this region to make wine. When fully ripe the flavor is sweet, with a delicious aroma."

46788. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Dasheen.

From Port of Spain, Trinidad. Presented by Mr. Eugene André. Received December 2, 1918.

"Tubers of what are being grown here as Chinese eddoes. This aroid gives better results in poor, dry soil than the dasheen, the latter requiring well-watered, low-lying land for remunerative crops." (André.)



FRUITS OF AN INTERESTING RELATIVE OF THE ANONAS FROM GUATEMALA. (*SAPRANTHUS* SP., S. P. I. No. 46786.)

The fruits are produced on a small tree 15 feet high, with immense, deep-maroon flowers, the outer petals of which are up to 4 inches long. The fruits are bright orange in color and resemble very much those of our own *Asimina*, or papaw. It may prove valuable in breeding work. (Photographed, natural size, by Wilson Popenoe, City of Guatemala, Guatemala, November 10, 1916; P16926FS.)



THE FAMOUS SEALING-WAX PALM OF THE MALAY ARCHIPELAGO. (CYRTOSTACHYS LAKKA BECCARI, S. P. I. NO. 46865.)

This palm, which is scarcely known in America, merits trial in southern Florida and in our island possessions. The strong suckering habit lends this palm to mass effects that are usually difficult to attain in such stately subjects. The common name is apparently derived from the bright red sheaths. (Photographed by J. F. Rock, Singapore, Straits Settlements, September, 1920; P22622FS.)

"This variety, known in Trinidad as Chinese eddo, is very similar in appearance to what has been previously introduced in the United States as the Trinidad dasheen. The quality of the specimens received is excellent." (R. A. Young.)

46789. ROSA GENTILIANA Lev. and Van. Rosaceæ. **Rose.**

From England. Presented by Sir David Prain, director of the Royal Botanic Gardens, Kew. Received December 3, 1918.

"A plant grown from a cutting supplied by Sir William Thiselton-Dyer." (Prain.)

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. The numerous large white flowers are very fragrant, and the anthers are golden yellow. The species is easily distinguished by its glabrous, pale-gray shoots and the 3 to 5 foliolate leaves, which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Received as *Rosa cerasocarpa* Rolfe, which is referred to *R. gentiliana* in *Plantae Wilsonianae*.

46790. DIALYANTHERA OTOBA (H. B. K.) Warb. Myristicaceæ.
(*Myristica otoba* H. B. K.)

From Colombia. Presented by Mr. M. T. Dawe, Estacion Agronomica Tropical, San Lorenzo. Received December 3, 1918.

"A few days ago, in a local market, I came across a kind of butter or fat, known as *otoba*, which the people here very much prize as a remedy for sores and skin diseases in cattle, and also for the eradication of ticks. I am also informed that persons suffering from eruptions take pills of this substance, it is said, with beneficial results. *Otoba* finds a ready sale in the local markets at from 30 to 50 cents per pound. The fat or butter is prepared from the seeds of *Myristica otoba*, a large forest tree of the Cordillera in this region, at about 5,000 feet altitude. The seeds when cut open have a distinct and agreeable odor which is imparted to the butter when prepared." (Dawe.)

46791 to 46793.

From Angola, Africa. Presented by Mr. J. Gossweiler, Servicos de Agricultura, Loanda. Received December 3, 1918.

46791. ALBIZZIA WELWITSCHII Oliver. Mimosaceæ.

An unarmed, tropical African tree, sometimes 80 feet high, with a spreading, truncate crown. The doubly pinnate leaves are made up of three to five pairs of pinnae, each bearing four to eight pairs of obliquely ovate, glabrous, shining leaflets from 1 to 2 inches long. The flowers are borne in axillary corymbs and are followed by thin, subcoriaceous, slightly curved pods 4 to 5 inches long. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 362.)

46792. ALOE LITTORALIS Baker. Liliaceæ.

Growing in the coast region of Angola, Africa, this aloe is a shrub often 10 feet tall with a simple trunk as thick as a man's arm. The leaves, arranged in dense rosettes, are sword shaped, 2 to 3 feet long, with spreading, horny, marginal teeth. The inflorescence is a panicle 4 to 5 feet long with branches of cylindrical racemes 1 foot long, densely crowded with the short-pedicelled flowers. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 7, p. 467.)

46791 to 46793—Continued.

46793. *PACHYLOBUS EDULIS* MUBAFO (Ficalho) Engl. Balsameaceæ.
(*Canarium mubafo* Ficalho.)

A tree found in the Cameroon Valley in Upper Guinea, Africa. The odd-pinnate leaves have 15 to 17 coriaceous, ovate leaflets 4 to 6 inches long. The small flowers are borne in rusty tomentose panicles collected near the ends of the branches. The oval, black fruits, about 3 inches long, have a pleasant taste. It is related to the Java almond and to the pili nut. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 327.*)

46794 to 46799. *TRITICUM AESTIVUM* L. Poaceæ. **Wheat.**
(*T. vulgare* Vill.)

From England. Collected by Dr. William A. Taylor, chief, Bureau of Plant Industry, during his recent trip to England. Received December 5, 1918. Quoted notes by Mr. J. A. Clark.

46794. C. I. 6219. *Federation.* **46796.** C. I. 6221. *Onas.*

46795. C. I. 6220. *Boadicea.*

46797. "C. I. 6223. *Yeoman.* Obtained from Prof. Biffen, Cambridge, England, who originated the variety. He stated to Dr. Taylor that it was the result of a cross made between the Red Fife wheat of Canada and one of his own strains."

46798. "C. I. 6224. *Yeoman.* A sample of Yeoman wheat grown by Mr. Alfred Amos, Wye, Kent, England, from a field of about 2½ acres which Mr. Amos said yielded at the rate of 96 bushels per acre."

46799. "C. I. 6225. An unidentified club wheat."

46800. *RUBUS GLAUCUS* Benth. Rosaceæ. **Andes berry.**

From Palmira, Colombia. Cuttings presented by Mr. Charles J. Eder. Received December 6, 1918.

"I believe the natural habitat of this berry to be about 8,000 feet above sea level." (*Eder.*)

For previous introduction, see S. P. I. No. 45365.

46801. *DIOSCOREA ALATA* L. Dioscoreaceæ. **Yam.**

Tubers grown at the Plant Introduction Field Station, Miami, Fla. Numbered for convenience in distribution.

"A very prolific, white-fleshed yam, obtained in the spring of 1918 by David Fairchild from Prof. C. T. Simpson, Lemon City, Fla. It grows best in deep, light, sandy land. It is supposed to have come previously from the West Indies. The skin is without coloration, and the flesh remains snowy white when cooked. As compared with most other yams, it is very dry. It is well adapted for baking and for boiling and mashing; the mashing should be very thorough. It is best to pare yams before boiling." (*R. A. Young.*)

46802 and 46803.

From Ecuador. Cuttings collected by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 7, 1918.

46802. *NAGEIA* sp. Taxaceæ.
(*Podocarpus* sp.)

"Huigra, November 4, 1918." (*Rose.*)

46802 and 46803—Continued.

46803. *PERSEA AMERICANA* Mill. Lauraceæ.
(*P. gratissima* Gaertn. f.)

Avocado.

"No. 23556. Quito, altitude 9,500 feet. October 28, 1918." (*Rose.*)

"This variety' apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe.*)

46804 to 46820.

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received December 9 and 10, 1918. Quoted notes by Mr. Davy.

46804. *ACACIA CYCLOPS* A. Cunn. Mimosaceæ.

"Naturalized on the Cape Flats, where it has proved valuable as a sand binder. Should succeed equally well on the California coast."

For previous introduction, see S. P. I. No. 30777.

46805. *ACACIA GIRAFFAE* Willd. Mimosaceæ.

"*Kameel doorn.* A valuable timber tree for arid regions in the warm Temperate Zone. One of the few native trees in British Bechuanaland. The ripe pods are greedily eaten by stock. It thrives in sandy soil, attains a large size, and furnishes valuable shade. The wood is dark red-brown in color and is used by the Bechuanas for spoons, knife handles, etc. At one time this tree furnished all the fuel for Kimberly, Vryburg, and Mafeking."

46806. *ERAGROSTIS SUPERBA* Peyr. Poaceæ.

"A valuable pasture grass; somewhat ornamental also."

For previous introduction, see S. P. I. No. 44741.

46807. *HIBISCUS URENS* L. f. Malvaceæ.

"*Wilde Stok-roos.* Ornamental perennial from the Calvinia Division, Cape Province, with a rainfall of under 4 inches."

A strong-growing, shaggy plant with handsome, deep-crimson flowers which are produced throughout the whole summer. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 173.*)

46808. *LOBELIA ERINUS MICRODON* (DC.) Sond. Lobeliaceæ.

"An ornamental annual, entirely different in habit from the ordinary garden form, being erect instead of diffuse. The fragrant flowers present beautiful shades of blue and white."

46809. *MANIHOT GLAZIOVII* Muell. Arg. Euphorbiaceæ. Ceara rubber.

"From Knysna, Cape Province."

"Ceara rubber occupies the second rank, and it would undoubtedly be equal to Para rubber if the sap were collected by some method so that it would not include so much foreign stuff. Ceara rubber is very elastic, dry, and not sticky unless it is impure, but when impure the loss in bulk amounts often to 25 per cent. The tree grows to a height of about 30 feet with a round head. It has 3 to 7 lobed gray-green leaves, in shape and size resembling those of the castor-bean plant." (*Semmler.*)

For previous introduction, see S. P. I. No. 4264.

46804 to 46820—Continued.

46810. RHUS VIMINALIS Ait. Anacardiaceæ.

"*Karree boom*. A hardy, evergreen tree, withstanding the drought and frost of the upper karoo, which has an altitude of 4,600 feet and a rainfall of about 10 inches in summer only. It grows readily from seeds, cuttings, or poles or stumps set in moist ground and kept moist until growth starts. Plants have been known to make a growth of $13\frac{1}{2}$ feet in three years. It prefers a thin, limestone soil, but thrives on other soils and attains a height of about 30 feet and a spread of the same distance. It is considered an excellent timber for gate and fence posts, poles having been found in good condition 25 years after they had been set in the ground. The wood is flexible and is considered excellent for yokes, keys, tobacco pipes, and furniture. Sheep and goats browse on the foliage, and the sweetish fruits are eaten by children and poultry. The *karree boom* makes a beautiful street and shade tree, being hardier and more ornamental than *Schinus molle*, which it resembles in habit. It should be tried in southern California, in Arizona, and in New Mexico. Sow seeds in the spring; plant cuttings or poles in midsummer."

46811. TRIFOLIUM ANGUSTIFOLIUM L. Fabaceæ.

Clover.

"An annual, naturalized around Cape Town. It might succeed as a green-manure crop on sandy soils in California or other regions of winter rainfall."

For previous introduction, see S. P. I. No. 34196.

46812. TRITICUM DURUM Desf. Poaceæ.

Wheat.

"South African durum, grown in the Cape Province from American seed."

46813 to 46817. TRITICUM AESTIVUM L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

46813. "*Spring Early*. Bearded; white; excellent milling quality; splendid yielder. This variety has become very popular of late in the western provinces; origin unknown."

46814. "*Thew*. This wheat has withstood rust for several years in the western provinces and is giving encouraging results."

46815. "*Rietti*. Bearded; ear long and open, shedding rather too easily. It stools well and is a heavy yielder, especially in wet, late seasons; wonderfully rust resistant. The grain is dark, but the flour is very white, and the variety is greatly valued as a milling wheat. This is the most extensively grown wheat in the western provinces, though *Glujas Early* threatens to oust it from this position. It has not given very good results in the region of summer rainfall."

46816. "*Du Toit*. Beardless; small, white grain; a good milling wheat. This variety has been grown for a number of years in certain of the western-province districts."

46817. "*Glujas Early*. Beardless or semibearded; white; excellent quality; good yielder; does not shell out too easily. This is probably the most rust resistant of all the white varieties of wheat yet introduced into the western provinces and stands second only to *Rietti* in the acreage under cultivation in the principal wheat areas. It is annually gaining in popularity, with every prospect of ousting *Rietti* from the premier position. Now largely grown in the Transvaal also."

46804 to 46820—Continued.**46818. VIRGILIA CAPENSIS (L.) Lam. Fabaceæ.**

"*Keurboom*, from Storms River, Cape Province. A small tree cultivated for its ornamental foliage and sweetly scented flowers. Its cultivation is most simple, but it dislikes drought and is subject to the red scale. The wood is rather light and soft and looks well when polished, but is subject to worm-eating. It is occasionally used for yokes, rafters, spars, fuel, etc."

46819. CUCUMIS sp. Cucurbitaceæ.

"Wild cucumber from the Kalahari Desert; said to be eaten by stock."

46820. MUNDULEA SUBEROSA (Roxb.) Benth. Fabaceæ.

"An ornamental, leguminous shrub from the warm-temperate, arid belt of the Transvaal."

46821. CANNA EDULIS Ker. Cannaceæ.**Edible canna.**

From Honolulu, Hawaii. Tubers presented by the Agricultural Experiment Station. Received April 1, 1918. Numbered December 31, 1918.

This plant, which is exclusively cultivated in Queensland, grows to a great height, often rising to 8 or 9 feet. It has very large, broad, ribbed leaves; and as many as 15 to 20 stalks rise from a single stool, each stalk representing a large bulb. In the flowering season the plant sends up a long, straight spike, from the head of which bursts a beautiful bunch of bright-scarlet flowers having the appearance of those of the common canna, known as "Indian Shot," but far larger. The seeds do not often mature, however, as do those of the canna family generally. The bulbs, from which the arrowroot of commerce is prepared, form a compact mass on and near the surface of the soil, and so prolific is the plant that I have dug from a single stool as much as 60 and even 80 pounds of bulbs. (Adapted from A. J. Boyd, *Queensland Agricultural Journal*, vol. 10, p. 32.)

For further information regarding its cultivation and manufacture, see above reference.

"The rootstocks are edible and palatable when properly cooked. More culinary experimentation with them, however, will be required before any definite decision regarding their probable popularity can be made. In Hawaii, where the experiment station officials have been growing an acre of this *Canna edulis*, Mr. F. G. Krauss informs us they have eaten it after boiling for 30 minutes and then mashing it as one does boiled potatoes, and he declares it is a good substitute for the potato. In his opinion it outyields the potato two to one. The tops have been used as forage for cattle and swine." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 46313.

46822 to 46831. × CASTANEA NEGLECTA Dode. Fagaceæ.

From Cape Henry, Va. Collected by Mr. J. B. Norton, physiologist, of the United States Department of Agriculture. Received December 10, 1918.

Quoted notes by Mr. Norton.

"While at the Virginia Truck Experiment Station at Diamond Spring, Va., in 1918, I had occasion to make an observation trip through the dune and desert region inside Cape Henry. Along the inside edge of the big dune were large trees of many kinds being covered up by the encroaching sand; and along the foot of the dune I found empty chinquapin burs. No bushes suggesting chin-

quapins were present, but a search revealed that the burs had dropped from a tree fully 30 feet high growing well up on the slope. On the inner side of the dune are found the best trees, but as the advancing sand covers up the lower part of the tree all we see is the top, looking like a thicket of shrubby bushes. Sometimes the top is seen sticking out of the dune fully 40 or 50 feet above the 'desert' floor. In the 'desert' I could find only in rare instances trees that showed a main trunk undamaged by fire. Most individuals were shrubby growths from a large basal crown, often with two or more sets of fire-killed shoots of different ages among the living shoots. Cuttings were collected from several of these trees and shrubs, but until they are tested their relative merits will be uncertain. Some of the fire-burned shrubs may be better potentially than the large ones that escaped burning."

46822. "No. 1. From a tree back of old sand pit in the 'desert' country. Collected December 4, with Mr. L. B. Smith, of the Virginia Truck Experiment Station. Growing in very light shifting sand among scrub oaks. In some way this escaped the fires that caught all its neighbors. The trunk is large enough to yield a good post."

46823. "No. 2. From a tree pointed out by Mr. Moses Brown, the game warden of this vicinity, who said that he had in past years taken as much as 2 bushels of nuts from it. The nuts of this tree are larger than those on other trees in the 'desert,' according to Mr. Brown. Although the tree is a dwarf in the poor 'desert' sand, a good railroad tie could be made from the trunk."

46824. "No. 3. From a tree 10 inches in diameter growing near the pond in the edge of the dune back of a new pit about 100 yards southwest of the big tree (No. 7)."

46825. "No. 4. From a scrub tree in burned-over 'desert,' gathered as a check sample of the normal growth in this region. It is possible that some of these burned-over trees may be the best in growth."

46826. "No. 5. From a tree growing through the dune northeast of the big tree (No. 7) at a new pit. It stands 40 feet up the side of the dune and has branches 4 inches through and 12 feet high. It must be a large tree covered up, as it spreads over 30 feet of dune face."

46827. "No. 6. I have called this the evergreen tree, as its leaves were largely green and persistent at this date [December 6]. It stands well up on the dune face several hundred yards northeast of the big tree (No. 7). The nuts on this tree must be very large, as the hulls are much larger than those normally seen at Washington. The bur clusters are often 4 to 6 inches long."

46828. "No. 7. From the big tree found in October. As this now stands covered with 30 feet of sand, it is made up of two large branches 10 inches in diameter projecting 30 feet above the sand. Below the junction the trunk must be much larger! An old dead pine top just back of this tree indicates that the ground here is nearly at the base level of the 'desert.' This tree must have been at least 50 feet high."

46829. "No. 8. From a tree with an 8-inch clear trunk 12 feet high below the branches, found in the 'desert' scrub south of the big tree (No. 7)."

46830. "No. 9. From a tree with a 10-inch clear trunk projecting from the dune 30 feet up from the base; part of a tree top, its branches spreading out and making a veritable thicket on the dune, northeast of the big tree (No. 7)."

46822 to 46831—Continued.

46831. "No. 10. From the only tree found growing in moist soil, with surroundings indicating an old swamp. Blueberry and similar shrubs grew near this. This tree is almost 10 inches through at the base and would make good post wood."

46832. *RIBES VULGARE* Lam. Grossulariaceæ. Garden currant.

From Maidstone, England. Plants purchased from George Bunyard & Co. Received December 10, 1918.

Transparent. A currant of moderate growth, with long bunches of pleasantly flavored, large, yellow berries; an excellent exhibition variety. (Adapted from *Bunyard & Co.'s trade catalogue.*)

46833. *VITIS* sp. Vitaceæ. Grape.

From Southport, Conn. Cuttings presented by Mr. R. P. Wakeman. Received December 12, 1918.

"During the past few years I have brought a few seedling grapes to fruitage, and out of the lot one seems good enough to be considered an acquisition. It is white in color and between *Niagara* and *Green Mountain* in size. The bunches are of good size, but are not shouldered exactly like the *Niagara*. The berries have tender pulp and are very sweet. They ripen in southwestern Connecticut about September 6 and hang on well. It makes fine grape juice." (*Wakeman.*)

46834 to 46853.

From Jamaica Plain, Mass. Seeds of trees and shrubs from various sources presented by Prof. C. S. Sargent, Arnold Arboretum. Received December 12, 1917. Quoted notes from the Arboretum.

46834. *ABIES SIBIRICA NEPHROLEPIS* Trautv. Pinaceæ. Fir.

"Forma *chlorocarpa*. Green cone form from Japan. Wilson No. 10509."

46835. *ACANTHOPANAX* sp. Araliaceæ.

"Forrest No. 14853. A. No. 498."

46836 and 46837. *ACER* sp. Aceraceæ. Maple.

46836. "Forrest No. 14763. A. No. 508."

46837. "Forrest No. 15324. A. No. 509."

46838. *BETULA CHINENSIS* Maxim. Betulaceæ. Birch.

"Wilson No. 10707; from Japan."

46839. *BETULA SCHMIDTII* Regel. Betulaceæ. Birch.

"Wilson No. 10710; from Japan."

46840. *BETULA* sp. Betulaceæ. Birch.

"Forrest No. 15381. A. No. 552."

46841. *LARIX* sp. Pinaceæ. Larch.

"Green cone form from Japan. Wilson No. 10508."

46842 to 46853. (Undetermined.)

"Araliaceous trees and shrubs collected by the Forrest Expedition in 1918, eastern Asia."

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a 'Forr.' number is also given, Mr. Forrest had reason

46834 to 46853—Continued.

to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from a letter of the *Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.*)

46842. "Forr. No. 15045; A. No. 495."

46843. "Forr. No. 15046; A. No. 496."

46844. "Forr. No. 14852; A. No. 497."

46845. "Forr. No. 14683; A. No. 499."

46846. "Forr. No. 14940; A. No. 500."

46847. "Forr. No. 14969; A. No. 501."

46848. "Forr. No. 15212; A. No. 502."

46849. "Forr. No. 15342; A. No. 503."

46850. "Forr. No. 15353; A. No. 504."

46851. "Forr. No. 15789; A. No. 505."

46852. "Hills north of Tengyueh, 1917. A. No. 506."

46853. "Chungtien plateau shrub, 20 to 30 feet. A. No. 507."

46854 to 46859. PAPAVER SOMNIFERUM L. Papaveraceæ. Poppy.

From India. Seeds presented by Mr. James A. Smith, American consul, Calcutta, who obtained them from the economic botanist of the Government of the United Provinces. Received December 19, 1918. Quoted notes by Mr. Smith.

46854. "No. 1. *Lakanio*. Good; mostly red flowers."

46855. "No. 2. *Gingorio*. Mostly white flowers."

46856. "No. 3. *Dhaturia*. Flowers white with pink and red tips; also pink flowers."

46857. "No. 4. *Dhoura Dhaturia*. White flowers tipped with red."

46858. "No. 5. *Horia*. Mostly white flowers; also some colored. Long pods, not round."

46859. "A mixed lot of colored varieties."

46860. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Grenada, British West Indies. Presented by Mr. J. C. Moore, superintendent, Agricultural Department. Received December 27, 1918.

"This variety is known locally as *Caracas*. The pods are a reddish claret color while young and until they commence to ripen." (*Moore.*)

46861. LIVISTONA ALTISSIMA Zoll. Phœnicaceæ. Palm.

From Buitenzorg, Java. Presented by the director of the Botanic Gardens. Received December 27, 1918.

A graceful palm with a trunk about 8 inches in diameter and often 80 feet tall, and bearing globose fruits the size of small cherries. The natives value the exceedingly hard wood very highly and use it especially for rafters, which last for three generations. (Adapted from *Zollinger, Natuurkundig Tijdschrift voor Nederlandsch Indie, vol. 14, p. 150.*)

46862. JATROPHA URENS L. Euphorbiaceæ.

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. Mario Calvino, director, Experiment Station. Received December 30, 1918.

Variety *inermis*.

The *chaya* is a shrub with fleshy branches bearing palmate 3-lobed leaves, 12 to 25 centimeters wide, dark green in color. The flowers are small, white, very pretty, especially in the wild spiny variety. There are two types of *chaya*, one provided with stinging hairs and the other unarmed, except for one or two hairs on the peduncle or petiole. This latter type is the one cultivated in Yucatan for the leaves, which are eaten in the same way as spinach, especially with eggs and hash. These leaves are rather thick and keep easily for several days, so that they could become a winter export, if once they were known and appreciated in the North. The *chaya* is propagated by cuttings, choosing the tips of the branches, to avoid the heavy bark, which calluses with difficulty. (Adapted from *Revista de Agricultura Comercio y Trabajo, Cuba, vol. 2, no. 8, p. 364.*)

"*Chaya de Mexico*. The leaves are edible; the following is the result of an analysis of them made at our station during the rainy season: Moisture, 74.00 per cent; protein, 0.94 per cent; ether extract, 0.20 per cent; carbohydrates, 20.71 per cent; crude fiber, 2.25 per cent; ash, 1.90 per cent." (*Calvino*.)

46863. PAULLINIA CUPANA Kunth. Sapindaceæ. Guarana.

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received December 30, 1918.

A climbing shrub with compound leaves made up of five, irregularly toothed leaflets. The small whitish flowers are borne in long racemes and are followed by 3-valved capsules about the size of filberts, each containing from one to three seeds. The pounded seeds are extensively used in Brazil as a nerve stimulant and restorative. The active principle is said to be the same as thein and is produced more abundantly than in any other plant, often as much as 5 per cent being found. The pounded seeds are formed into cylindrical cakes from which about a teaspoonful of powder is rasped off into a glass of cold water, making a refreshing and stimulating drink. (Adapted from *Lindley, Treasury of Botany, p. 852.*)

46864. ACTINIDIA CHINENSIS Planch. Dilleniaceæ. Yang-tao.

Plants grown from cuttings of S. P. I. No. 21781 sent to the Plant Introduction Field Station, Chico, Calif., by Mr. William Hertrich, San Gabriel, and grafted on seedlings of S. P. I. No. 46131. Numbered for convenience in recording distribution.

"The *yang-tao*, a deciduous climber, native to Szechwan Province, has attracted considerable attention because of the high quality of its fruits and the ornamental value of the plant. The leaves have a plushlike texture and an unusual dark-green color, while their large size and regular spacing add to the beauty of the vine. The flowers are buff yellow to white, fragrant, often 1½ inches across and are produced in great abundance. The fruits are ovoid to globose and about 2 inches long. The outside is russet brown and clothed with villous hairs. The flesh is green, of most excellent flavor, resembling that of a gooseberry, but tempered with a flavor peculiarly its own. The fruit is good when eaten fresh, and it also makes a very fine jam and sauce." (*David Fairchild.*)

46865. CYRTOSTACHYS LAKKA Beccari. *Phoenicaceæ.* **Palm.**

From Singapore, Straits Settlements. Presented by Mr. O. W. Barrett.
Received December 30, 1918.

"Kredok."

A tall, slender palm, native to Borneo. The pinnately divided leaves, 3 to 5 feet long, are made up of leaflets 18 inches long and 2 inches wide, which are obliquely bifid at the apex. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 2, p. 946.)

For an illustration of this palm, see Plate IV.

46866 to 46868. THEOBROMA CACAO L. *Sterculiaceæ.* **Cacao.**

From Coban, Guatemala. Presented by Mr. Oscar Majus. Received December 30, 1918. Quoted notes by Mr. Majus.

46866. "No. 1. Fruits with a red husk."

46867. "No. 2. Fruits with yellow husks."

46868. "No. 3. Fruits with a green husk."

46869 and 46870.

From Ganganba, Portuguese West Africa. Presented by Mr. A. W. Bailey.
Received December 30, 1918. Quoted notes by Mr. Bailey.

46869. *PENNISSETUM GLAUCUM* (L.) R. Br. *Poaceæ.* **Pearl millet.**
(*P. typhoideum* Rich.)

"Seeds of our giant African millet, called locally *Masangu*."

46870. *VOANDZEIA SUBTERRANEA* (L.) Thouars. *Fabaceæ.*

"Seeds of the ground bean, which is used commonly for food both by natives and Portuguese. The local name is *vielú*. While these require a long season to mature, they may be used green as shell beans. The natives plant one in a hill. The plants do not require an excessively fertile soil."

46871 to 46890.

From Burringbar, New South Wales, Australia. Presented by Mr. B. Harrison. Received November 28, 1918. Quoted notes by Mr. Harrison, unless otherwise stated.

46871. *ACACIA ANEURA* F. Muell. *Mimosaceæ.* **Wattle.**

"*Mulga*. This is a dry-country species. The foliage is eaten by stock in dry weather."

46872. *ACACIA HOMALOPHYLLA* A. Cunn. *Mimosaceæ.* **Wattle.**

"Native name *yarran*. A dry-country species greatly used for fodder; stock eat it freely. The timber, which is fragrant for some years after being cut, is used for cabinet and ornamental work."

46873. *ANGOPHORA SUBVELUTINA* F. Muell. *Myrtaceæ.*

"Called here 'apple-tree.' A large, spreading tree with strong and durable timber which is used for wheelwright work and flooring boards. The foliage is used to feed stock in dry seasons."

46874 to 46880. *ATRIPLEX* spp. *Chenopodiaceæ.* **Saltbush.**

The saltbushes are herbaceous or shrubby, usually much-branched plants, and show remarkable adaptation to arid, saline, or alkali-impreg-

46871 to 46890—Continued.

nated soils. They are highly valued for districts where little or no other vegetation exists. The following descriptions, unless otherwise indicated, are adapted from Farmers' Bulletin 108, entitled "Saltbushes," by Dr. P. B. Kennedy.

46874. ATRIPLEX CAMPANULATA Benth.

A perennial, with a hard, almost woody stem and rather slender, procumbent branches extending to 1 or 2 feet, the whole plant being nearly glabrous or mealy white. It is closely related to *A. leptocarpa*, which it closely approaches in habit, foliage, and inflorescence. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 177.)

46875. ATRIPLEX HALIMOIDES Tineo.

Mealy or gray saltbush. A low-growing, shrubby, robust perennial about 1 foot high, with variable, ovate-lanceolate leaves which are covered with whitish, dustlike scales. It is native to the central desert regions of Australia, and there it affords excellent forage for both sheep and cattle, which fatten remarkably well on it.

46876. ATRIPLEX HOLOCARPA F. Muell.

Annual saltbush. A low, densely branching annual about a foot high, with larger and fewer leaves than the Australian saltbush (*A. semibaccata*). The seeds are surrounded by a brown, fibrous spongy covering and are readily blown about by the wind, so that the plant can soon become widely disseminated. It made excellent growth, under adverse conditions, on the experiment grounds at Abilene, Tex. In spite of the worst drought that has ever been known in that part of Texas, this plant continued to mature leaves and seeds throughout the entire summer.

46877. ATRIPLEX LEPTOCARPA F. Muell.

Slender saltbush. A much-branched trailing perennial, the whole plant covered with a glaucous bloom. The leaves are variable in shape, but mostly oblong, and from 1 to 2 inches in length. In Australia it is sometimes found carpeting the ground over considerable areas. Von Mueller says that its drought-resistant qualities are remarkable.

46878. ATRIPLEX NUMMULARIA Lindl.

Round-leaved saltbush. A tall, shrubby perennial, sometimes reaching a height of 10 feet, and covered all over with downy, whitish scales. The leaves are mostly round, rather thick, and toothed along the margins. It is extensively planted and highly valued in central Australia, live stock being exceedingly fond of it, and its drought-resisting qualities are remarkable.

46879. ATRIPLEX SEMIBACCATA R. Br.

Australian saltbush. A vigorous, rapid-growing, much-branched perennial which forms a dense mat over the ground to the depth of 1 to 2 feet. The leaves are small, about an inch long, and coarsely toothed along the margins. This plant has been known to flourish on the poorest and most stubborn arid soil, so impregnated with alkali that no other useful plant could grow. It seems to have a re-

46871 to 46890—Continued.

markable number of virtues, including great frost resistance, palatability, heavy yield, sand-binding qualities, and the habit of spreading freely. Sheep and hogs eat it freely, and a mixture of three parts of this forage with one part of common hay is readily eaten by horses and cattle.

46880. *ATRIPLEX* sp.

These seeds were received as *Atriplex angulata*, but they do not agree with previous samples of this species nor with the botanical description. They are very close to *A. truncata* A. Gray.

46881. *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceæ.

"River oak. A tall, straight tree whose timber is light, tough, and strong and is used for bullock yokes, cricket bats, handles, staves, and fuel. The foliage is used for feeding stock."

46882 and 46883. *CASUARINA STRICTA* Ait. Casuarinaceæ.

46882. "Drooping she-oak. A useful timber and the best fodder tree for sheep and cattle in Australia."

46883. "Forest or drooping she-oak. Timber handsome, strong, and durable, used for veneers, cabinet work, staves, and shingles."

Received as *Casuarina quadrivalvis*, which is now considered to be a synonym of *C. stricta*.

46884. *CHLORIS VIRGATA* Swartz. Poaceæ.

"Australian Rhodes grass. It is suited for a wind-swept and sun-scorched district, and is a heavy yielder of a most nutritious fodder that is relished by all classes of stock."

46885. *EUCALYPTUS DIVERSICOLOR* F. Muell. Myrtaceæ.

"The *karri* of southwestern Australia. In favorable localities in humid valleys it attains a height of 400 feet and a diameter of 20 feet, with a trunk clear of branches for 300 feet. The timber is light colored, straight grained, and tough, and is used for large planks, spokes and felloes, shipbuilding, masts, and railroad ties."

46886. *EUCALYPTUS HEMIPHLOIA ALBENS* F. Muell. Myrtaceæ.

"A tree, growing to a height of 90 feet and with a diameter of 3 feet, suitable for cool climates. The foliage is used largely for feeding cattle and sheep during droughts. They eat it freely after the tree has been cut for a few days, as it seems to get sweeter. The timber is hard and durable."

46887. *EUCALYPTUS PAUCIFLORA* Sieber. Myrtaceæ.

"White gum. A tree reaching a height of 100 feet and a diameter of 4 feet. The foliage is eaten by cattle and sheep in dry seasons. The timber is used for building and fencing purposes. This species grows well in swampy lowlands and should thrive well in Florida."

Received as *Eucalyptus coriacea*, which is considered to be a synonym of *E. pauciflora*.

46888. *EUCALYPTUS OBLIQUA* L'Her. Myrtaceæ.

"A tree of rapid growth with a straight stem reaching a height of 300 feet and a diameter of 10 feet. The timber is very fissile and is used for buildings, fence rails, palings, and shingles. The bark is used for rough roofing and also in the manufacture of paper."

46871 to 46890—Continued.

46889. *EUCALYPTUS REDUNCA* Schauer. Myrtaceæ.

"The mule gum tree of West Australia, the *wandoo* of the aborigines. It grows to a large size, often being 16 or 17 feet in diameter; it thrives in poor soil and in a cold, flat country. The light-colored timber is hard, heavy, tough, and durable, and is prized for wheelwright work, building purposes, and various implements."

46890. *PENNISSETUM PURPUREUM* Schum. Poaceæ.

Grass.

"Elephant grass. Grows to a height of 10 to 20 feet, is a heavy yielder, and is very drought resistant, being permanent when once established. It yields 30 tons per acre annually and can be cut several times a year. Plant 3 feet apart in rows 5 or 6 feet apart."

46891 and 46892.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 2, 1918.

46891. *ILEX PARAGUARIENSIS* St. Hil. Aquifoliaceæ.

Yerba maté.

For previous introduction and description, see S. P. I. No. 43456.

46892. *SALVIA GARDNERIANA* Hort. Menthaceæ.

Sage.

Received as *Salvia gardneriana*, which seems to be a horticultural name, being mentioned in the Standard Cyclopedia of Horticulture, as follows: "*S. Gardneriana* Hort., is offered in the trade."

46893 to 46895.

From Ecuador. Obtained by Dr. J. N. Rose, associate curator, United States National Herbarium. Received December 9, 1918. Quoted notes by Dr. Rose.

46893. *CUCUMIS ANGURIA* L. Cucurbitaceæ.

"Rose No. 23593. Seeds of a common yellow-flowered small vine growing prostrate in the grass and weeds along the coast of Ecuador. The specimens collected were obtained near Duran, November 8, 1918. It was found only in fruit. This is oblong in shape, about 1½ inches long, with a more or less muricated surface. Seeds and herbarium specimens were obtained."

46894. *DIOSCOREA* sp. Dioscoreaceæ.

"Tubers of a very beautiful vine found growing in a mountain valley below Huigra, Ecuador. It has showy purple leaves and is a rapid grower. Only immature flowers and leaf specimens were obtained in addition to these tubers."

46895. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"Seeds taken from fruits obtained in the Quito market."

"Seeds of a variety which apparently belongs to the Mexican race. It will probably be hardy and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It is probable that it will prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe*.)

46896 and 46897.

From Zacuapam, Mexico. Presented by Mr. C. A. Purpus through the American consul at Vera Cruz. Received December 27, 1918.

46896. *CHENOPODIUM AMBROSIODES* L. Chenopodiaceæ.

An annual plant from 1 to 2 meters in height, with alternate lanceolate leaves. The inflorescence consists of simple leafy spikes of very small greenish flowers. The seeds are small and black. The whole plant has a pronounced odor. An infusion of the plant has been used in Europe with good results as a cure for nervous affections. (Adapted from *The Pharmaceutical Journal and Transactions*, 3d ser., vol. 9, p. 713.)

46897. (Undetermined.)

"Fruits of a valuable tree, belonging to the Anacardiaceæ and called here *cacao*. This has a beautiful purplish brown, extremely hard wood." (*Purpus*.)

46898 to 46901. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From the British West Indies. Presented by the Trinidad and Tobago Department of Agriculture. Received December 27, 1918.

Four lots of seeds and pods of cacao without information as to the different varieties. Given separate numbers for convenience in recording distribution.

46902 to 46904.

From Johannesburg, South Africa. Presented by Mr. J. Burt Davy. Received December 27, 1918. Quoted notes by Mr. Davy.

46902. *ELEPHANTORRHIZA ELEPHANTINA* (Burch.) Skeels. Mimosaceæ.
(*E. burchellii* Benth.)

"The underground stem is used for tanning leather and dyeing stuffs a brown color."

46903. *MOMORDICA BALSAMINA* L. Cucurbitaceæ. **Balsam-apple.**

The balsam-apple is known to American gardeners as an ornamental annual vine. The palmately 3 to 5 lobed leaves are cordate-orbicular in outline, with acutely notched lobes. The solitary yellow flowers are nearly an inch across and the orange-colored fruit, 2 to 3 inches long, is ovoid and either smooth or tuberculate. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 2060.)

"The balsam-apple grows in Syria and is famous for curing wounds. The unripe fruit is infused in sweet oil and exposed to the sun some days until it becomes red. This, applied on cotton to a fresh wound, is esteemed by the Syrians next to Balsam of Mecca." (*Hogg, The Vegetable Kingdom*, p. 334.)

46904. *PODALYRIA* sp. Fabaceæ.

"An ornamental leguminous shrub from the coastal districts of the Cape Province."

46905 to 46942. NICOTIANA TABACUM L. Solanaceæ. Tobacco.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received December 27, 1918.

"A collection of tobacco seeds, the result of three years of selection work with the best varieties sent to us from various localities." (*Silveira*.)

46905 to 46942—Continued.

- | | |
|---|--|
| 46905. "No. 4a. <i>M a r y l a n d</i>
<i>smoking.</i> " | 46922 "No. 28. <i>Petizo criollo.</i> " |
| 46906. "No. 8. <i>Zimmer Span-</i>
<i>ish.</i> " | 46923. "No. 29. <i>Bacino.</i> " |
| 46907. "No. 8a. <i>Zimmer Span-</i>
<i>ish.</i> " | 46924. "No. 30. <i>Chileno.</i> " |
| 46908. "No. 9. <i>Latakia.</i> " | 46925. "No. 32. <i>Tropezut.</i> " |
| 46909. "No. 10f. <i>Virginia.</i> " | 46926. "No. 33. <i>Orinoco.</i> " |
| 46910. "No. 10g. <i>Virginia.</i> " | 46927. "No. 34. <i>Sumatra.</i> " |
| 46911. "No. 10j. <i>Virginia.</i> " | 46928. "No. 36. <i>Connecticut.</i> " |
| 46912. "No. 12. <i>Canario Vuelta</i>
<i>Abajo.</i> " | 46929. "No. 37. <i>Kentucky.</i> " |
| 46913. "No. 12a. <i>Canario Vu-</i>
<i>elta Abajo.</i> " | 46930. "No. 38. <i>Salonica.</i> " |
| 46914. "No. 13a. <i>Habano Vu-</i>
<i>elta Abajo.</i> " | 46931. "No. 40. <i>Belge.</i> " |
| 46915. "No. 13d. <i>Habano Vu-</i>
<i>elta Abajo.</i> " | 46932. "No. 41. <i>Comstock Spanish.</i> " |
| 46916. "No. 13e. <i>Habano legiti-</i>
<i>mo.</i> " | 46933. "No. 42. <i>Aurora.</i> " |
| 46917. "No. 14b. <i>Brasil.</i> " | 46934. "No. 43. <i>Habano seedleaf.</i> " |
| 46918. "No. 14e. <i>Brasil.</i> " | 46935. "No. 44. <i>Petit Habano.</i> " |
| 46919. "No. 15. <i>Del Pais.</i> " | 46936. "No. 45. <i>Canelle R.</i> " |
| 46920. "No. 22. <i>Rubio salteno.</i> " | 46937. "No. 46. <i>Big Habano.</i> " |
| 46921. "No. 27. <i>Canarias.</i> " | 46938. "No. 49. <i>Blue Prior.</i> " |
| | 46939. "No. 50. <i>Connecticut broad-</i>
<i>leaf.</i> " |
| | 46940. "No. 52. <i>Big Ohio.</i> " |
| | 46941. "No. 1719. <i>Atyra Habano.</i> " |
| | 46942. "No. 1720. <i>Barreiro Grande</i>
<i>Habano.</i> " |

46943 to 46948.

From Colombia. Presented by Mr. M. T. Dawe, San Lorenzo. Received December 27 and 30, 1918. Quoted notes by Mr. Dawe.

46943 and 46944. *CARICA CANDAMARCENSIS* Hook. f. Papayaceæ.

46943. "A papaw with yellow fruits. The pulp surrounding the seeds is edible, but the flesh is eaten only in preserves. Found in Departamento de Caldas at an altitude of 6,000 to 7,000 feet."

46944. "Another form of the same species."

46945. *CARICA* sp. Papayaceæ.

"*Papayuela cimarron.* A papaw with red fruits found at Belalacazar in the Province of Caldas at an altitude of 6,000 to 7,000 feet. The seeds are surrounded by a sweetish pulp which is eaten. The flesh of the fruit is white and is not considered to be edible while raw, but a preserve is made of it."

"These seeds are apparently the same species as those obtained by Mr. O. F. Cook at Ollantaytambo, Peru (S. P. I. No. 41339). They are about twice as large as the seeds of the evidently closely related *Carica candamarcensis*," (H. C. Skeels.)

46946. *DUCHESNEA* sp. Rosaceæ.

"A wild strawberry with yellow flowers and spherical fruits of insipid taste. Central Cordillera at altitudes of 6,000 to 8,000 feet."

46943 to 46948—Continued.

46947. *SOLANUM QUITOENSE* Lam. Solanaceæ.

"*Lulo*. A plant found in the subtropical parts of Colombia. The edible fruit is employed for flavoring preserves, sweets, and the like."

46948. *SOLANUM* sp. Solanaceæ.

"A shrub of the habit of the tree tomato, bearing golden yellow fruit the size of duck eggs. It is not edible, but is used for killing cockroaches. From the Province of Caldas at an altitude of 6,000 feet."

46949 and 46950.

From Hongkong, China. Presented by Mr. W. J. Tutcher. Received December 30, 1918.

46949. *CAESALPINIA VERNALIS* Champ. Cæsalpiniaceæ.

An ornamental shrub, native of Hongkong, and climbing by the reversed prickles on the under side of the leaves. The leaves are bipinnate being made up of 9 to 12 pairs of pinnæ, each bearing four to eight pairs of ovate leaflets 1 inch long. The lemon-yellow flowers are borne in racemes about 6 inches long. (Adapted from *Curtis's Botanical Magazine* pl. 8132.)

46950. *MUSSAENDA PUBESCENS* Ait. f. Rubiaceæ.

A small, ornamental climbing shrub found on the island of Hongkong and in the Province of Yunnan, China. The ovate-lanceolate leaves are minutely pubescent, and the yellow flowers are borne in loose, few flowered cymes. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3 p. 396.)

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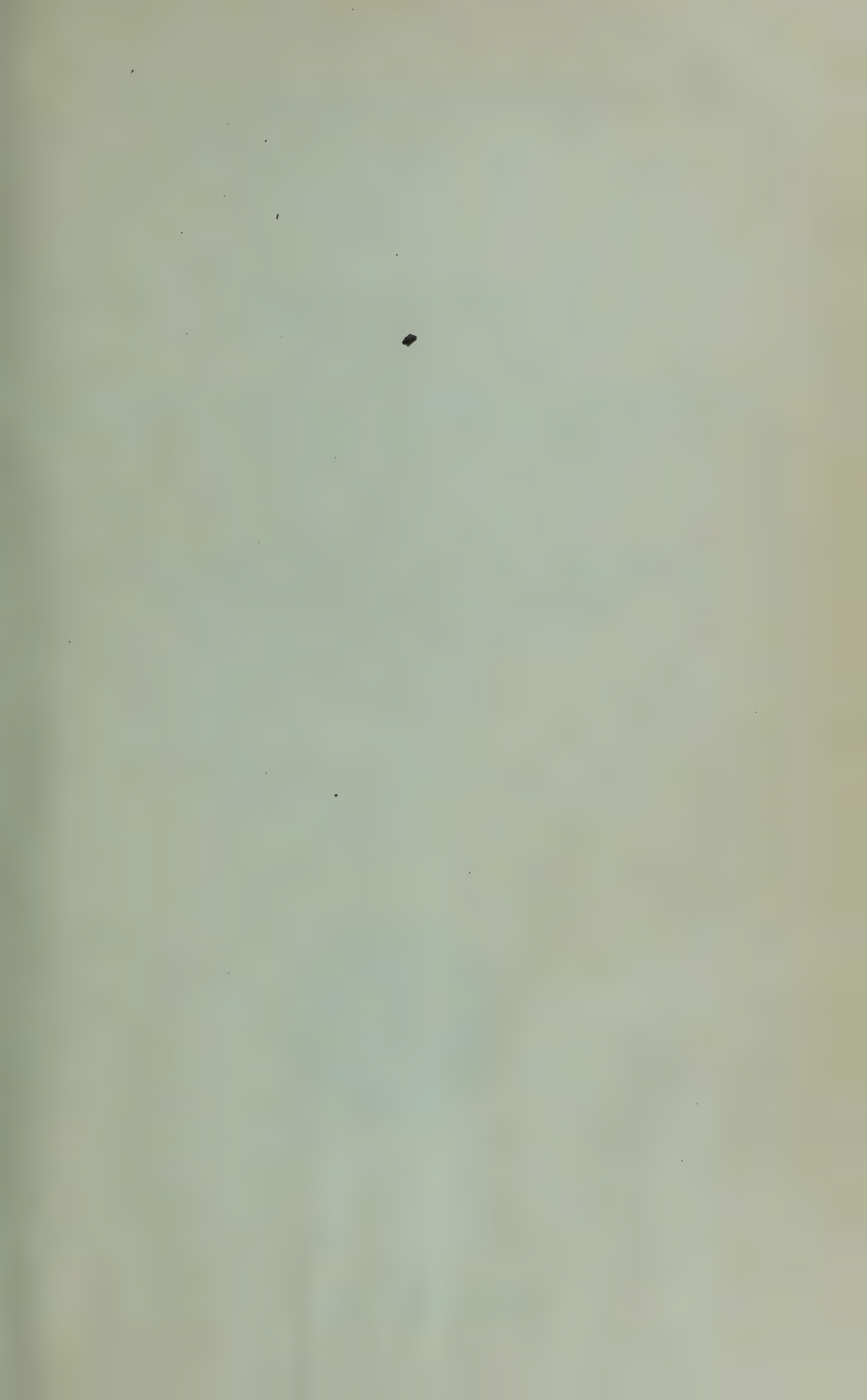
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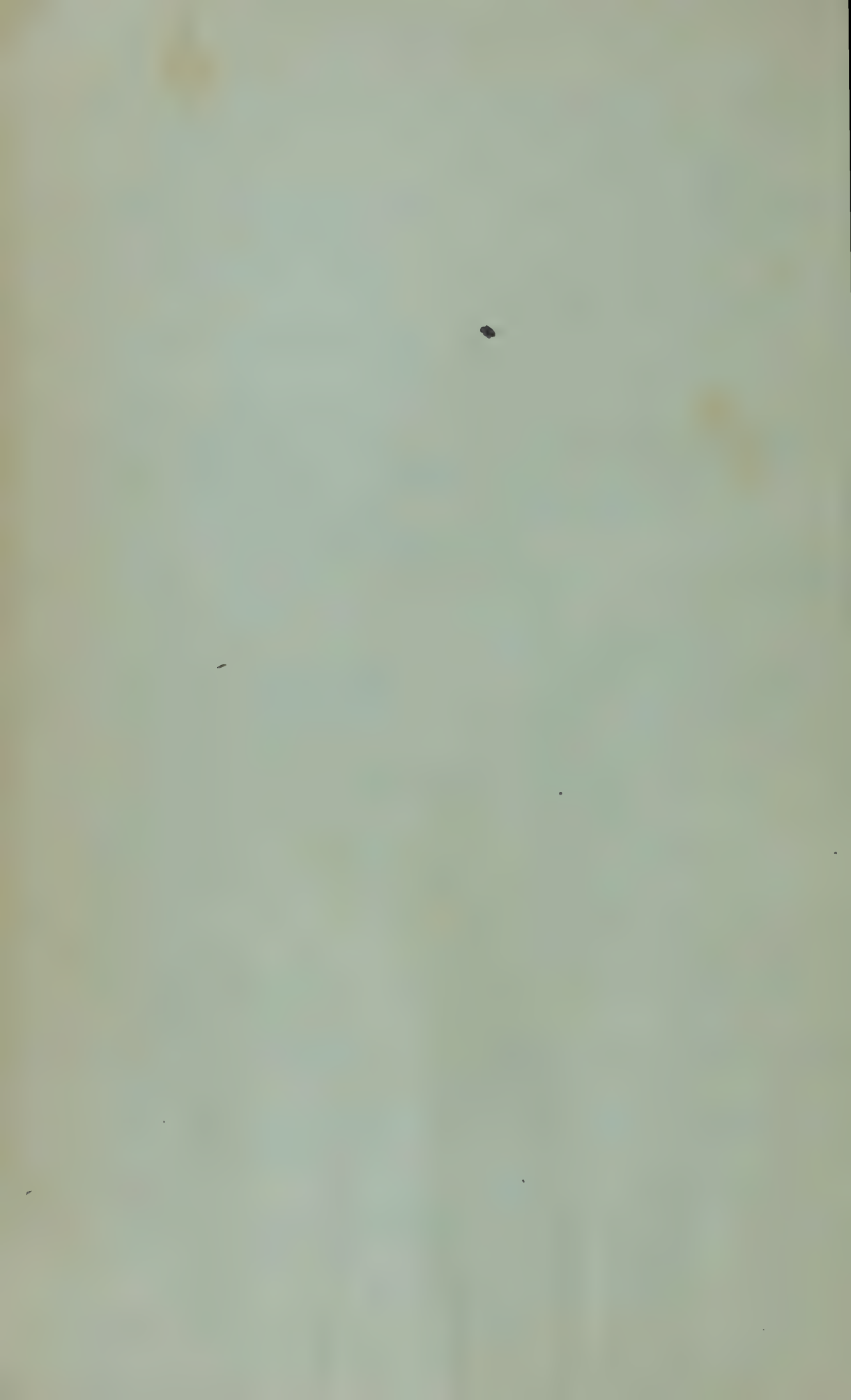
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BUREAU OF PLANT INDUSTRY.

WILLIAM A. TAYLOR, *Chief of Bureau.*

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1919.

(No. 58; Nos. 46951 to 47348.)



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Chief of Bureau, WILLIAM A. TAYLOR.

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FOREIGN SEED AND PLANT INTRODUCTION.

SCIENTIFIC STAFF.

David Fairchild, *Agricultural Explorer in Charge.*

P. H. Dorsett, *Plant Introducer, in Charge of Plant Introduction Gardens.*

R. T. Galloway, *Plant Pathologist, Special Research Projects.*

Peter Bisset, *Plant Introducer, in Charge of Experimenters' Service.*

Wilson Popenoe and J. F. Rock, *Agricultural Explorers.*

R. A. Young, *Plant Introducer, in Charge of Dasheen and Tropical Yam Investigations.*

H. C. Skeels, *Botanist, and G. P. Van Eseltine, Assistant Botanist, in Charge of Botanical Investigations.*

L. G. Hoover, *Assistant Plant Introducer, in Charge of Chayote Investigations.*

C. C. Thomas, *Assistant Plant Introducer, in Charge of Jujube Investigations.*

E. L. Crandall, *Assistant in Charge of Photographic Laboratory.*

P. G. Russell and Patty Newbold, *Scientific Assistants.*

David A. Bisset, *Superintendent, Bell Plant Introduction Garden, Glenn Dale, Md.*

Edward Goucher, *Plant Propagator.*

J. E. Morrow, *Superintendent, Plant Introduction Garden, Chico, Calif.*

Henry Klopfer, *Plant Propagator.*

Edward Simmonds, *Superintendent, Plant Introduction Gardens, Miami, Fla.*

Charles H. Steffani, *Plant Propagator.*

Henry E. Juenemann, *Superintendent, Plant Introduction Garden, Bellingham, Wash.*

Wilbur A. Patten, *Superintendent, Plant Introduction Garden, Brooksville, Fla.*

E. J. Rankin, *Assistant in Charge, Plant Introduction Garden, Savannah, Ga.*

Collaborators: Thomas W. Brown and Robert H. Forbes, *Cairo, Egypt*; A. C. Hartles

Seharunpur, India; Barbour Lathrop, *Chicago, Ill.*; Dr. H. L. Lyon, *Honolulu, Hawaii*

Henry Nehrling, *Gotha, Fla.*; Charles T. Simpson, *Little River, Fla.*; Dr. L. Trabu

Algiers, Algeria; E. H. Wilson, *Jamaica Plain, Mass.*; E. W. D. Holway, *Faribault*

Minn.; Dr. William Trelease, *Urbana, Ill.*

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM JANUARY 1 TO MARCH 31, 1919 (NOS. 46951 TO 47348).

INTRODUCTORY STATEMENT.

The purpose of these introductory statements has been to emphasize certain introductions which, from the accumulated experience of those in contact with the stream of plant immigrants, appear to have unusual promise or interest. As the years have passed and that experience has widened, the proportion of new plants which appear interesting seems to have increased and the introductory statements have become correspondingly longer. This is quite the opposite of the predictions of my friends, who raised the question in the beginning as to what I proposed to do when all the plants which were worth while had been introduced. Instead of the widening prospect that actually lies before us and which embarrasses us with its wealth of opportunity, they saw in their imagination the stream of new plants becoming a tiny brook and finally stopping altogether. It is interesting to note that, whereas in the spring quarter of 1913 there were 407 introductions, six years later, 1919, there were practically as many (397), and this in the face of a world war which had demoralized shipping. The dearth is not in plant material of great potential possibilities but in experimenters who can adapt these plants to the wide uses of mankind. Ten thousand independent experimenters scattered over this country could spend their lives working on the material we have brought in and not exhaust its possibilities. It is hoped that these introductions will attract the attention of amateurs to important and interesting problems in a way which, perhaps, the descriptions themselves would not, and it is with this idea in mind that the following comments are made:

Beet tops as greens are so common a vegetable that those who are fond of them may like to have a perennial variety (No. 46951) sent by Dr. Trabut from North Africa, which yields large quantities of leaf.

From the same source comes a forage grass (*Phalaris coerulescens*, No. 46955) which may be worthy of naturalizing on the dry sheep pastures of California, since the animals forage on the subterranean bulbous parts of it, as Dr. Trabut writes, when all other vegetation is dried up.

The argan tree of Morocco (*Argania spinosa*, No. 46969), which yields a valuable oil, is again introduced, but whether or not it can stand the cold weather of southern California is the question. Earlier attempts have failed.

The Taiwanian (No. 46980) is a Formosan conifer of great beauty which was obtained by Mr. E. H. Wilson personally from Formosa and every possible effort should be made to establish it in our Southern States.

Mr. Popenoe describes *Tigridia pavonia* (No. 46981) as a fascinating garden vegetable. When in bloom it has attractive flowers varying from yellow to deep scarlet in color. Mrs. Nuttall, who has them in her garden in the City of Mexico, finds that they multiply rapidly and require no cultural attention. The tubers, called cacomite, suggest chestnuts when cooked.

From Rio de Janeiro the Minister of Agriculture, Mr. Cardinele, sends a collection of seeds of unusual forage and fiber plants (Nos. 46985-46999), collected in the States of Matto Grosso and Amazonas, Brazil, by Dr. Geraldo Kuhlmann, of the Rondon Commission. It will be strange if some valuable grasses for the Southern States do not come from this collection.

Mr. Wester sends in the spores of five tropical ferns (Nos. 47011-47015). Since Mr. Hertrich, of Pasadena, and others have been so successful in growing tree ferns from spores, the beautiful tree fern of the world ought to be introduced and established, as far as it is possible, where they will add grace and beauty to the woodland and rockeries of southern California and Florida.

Nos. 47017-47057 represent a remarkable collection of forage grasses made by Sr. André Goeldi, State of Para, Brazil, some of which might find a place on our Everglade lands, provided the soil conditions are suitable. Word now comes of Sr. Goeldi's death, and we record here sentiments of sincere regard. The world can ill afford to lose these research men.

To find attractive plants which will live down to the water line on sand dunes is a problem of no mean importance, and Mr. J. Burt Davy's suggestion of *Mimulus affra* (No. 47099) from the African coast for this purpose is worthy of emphasis.

Since the search for corn is for varieties which have some particularly valuable character that may be incorporated into our American races of corn by breeding, the collection (Nos. 47109-47114) sent by

Mr. Cardinell, which represents varieties reported to grow wild in Matto Grosso, can hardly fail to interest the corn breeders, as will also the dwarf varieties (Nos. 47202 and 47327) sent by Mr. Wester from Cotabato on the island of Mindanao, where this crop has been grown for a long time by the wild tribes.

The roselle as a source of brilliant-red jelly-making material is a valuable plant, and Mr. Fraser's prolific variety (*Hibiscus sabdariffa*, No. 47119), which he has selected on Ramrod Key, Fla., will interest those who are growing the common varieties.

A named collection of 14 varieties of Japanese flowering cherry trees from Yokohama (*Prunus serrulata*, Nos. 47132-47145) includes some of the loveliest of these superb early-flowering trees. It will be recalled that the selected sorts arranged for by Mr. E. H. Wilson and later by Mr. Frank N. Meyer from the famous Arakawa collection near Tokyo were previously introduced.

Mr. Zon, of the Forest Service, is inclined to recommend for trial in Florida the 100-foot Tasmanian cypress pine (*Callitris cupressiformis*, No. 47151), which grows well on the coast on poor soils and may prove useful in furnishing a comparatively soft light wood for local use.

I do not know that the Taranaki rimu (*Dacrydium cupressinum*, No. 47154) has been tried around Santa Barbara, Calif., but, if not, its weeping-willow habit should make it worth trying there.

The culture of certain drug plants has been commercially profitable, and *Strophanthus gratus* (No. 47217), which yields the crystalline strophanthin, may prove to be one of the valuable species for cultivation.

From the quantity of sweets and sweetened chewing gums which many Americans use, it would seem as though their chief aim was to keep their mouths sweet all the time. For such as these Mr. Kirby has sent in from Nigeria seeds of a tropical tree (*Synsepalum dulcificum*, No. 47219) whose berries when eaten in considerable quantity are said to make everything eaten thereafter, for a whole day, whether vinegar, lime juice, or tartaric acid, taste as though it were composed solely of saccharine matter.

Various species of *Vitex* are hardy in America. Because they bloom profusely and produce large quantities of nectar they have been proposed as honey plants. A tropical species, *Vitex grandifolia* (No. 47220) from Nigeria, growing at 1,000 feet altitude, and bearing an edible plumlike fruit which is made into "a kind of honey," will be of particular interest, and it is hoped that it will grow in southern Florida at least.

It is not without a feeling of relief that I call attention to the fact that a remarkable species of tree (*Kokia drynarioides*) has been

saved by Mr. Rock. This tree, which is related to the cotton plant, had become almost extinct—was reduced to a single tree, in fact—but now its progeny, a single tree on Mr. C. C. Conradt's place at Pukoo in Molokai, has borne its first crop, consisting of five seeds. Two of these have been sent to us (No. 47223). To have prevented a tree of such possibilities from becoming extinct may win us more praise from succeeding generations than now seems probable.

It seems almost incredible that no tropical horticulturist has made a real collection anywhere of the anonas for the purpose of their improvement by hybridization. The abo (*Annona senegalensis*, No. 47214), with dark-red flesh, would make possible most remarkable color combinations should some one take up in earnest a study of this fascinating group.

Mr. Benjamin Hunnicutt, of Lavras, Brazil, is convinced of the forage value of the "capim gordura roxa," or molasses grass (*Melinis minutiflora*, No. 47162), and has sent in a quantity of seed. At Lake Alfred, Fla., Mr. John Morley, who has a 2-acre patch of it on which he keeps two dairy cows, finds that if cows are put on the young grass they quickly learn to like it, whereas if the grass is allowed to get coarse they refuse to touch it, perhaps because of its heavy nature.

The brilliancy and grace of the Chorizemas (Nos. 47186 and 47187) as potted plants should make them much better known. They are West Australian shrubs with brilliant orange-red pea-shaped flowers.

A Formosan fir (*Abies mariesii kawakamii*, No. 47198), from the Arnold Arboretum, which grows to 80 feet in height—one of the rarest of the silver firs—and a spruce (*Picea morrisonicola*, No. 47199) from the same interesting region will find their way into our Southern States.

Dr. A. H. Graves, of New Haven, has located a number of chestnut trees (Nos. 47330–47348) which are not dying out but growing well in the area infested by the bark disease. The circumstantial evidence is strong that they have descended from disease-resistant ancestors, and as such may have in them the possibilities of being closely interbred to form a resistant race of the American chestnut.

"Konyaku" (*Amorphophallus konjac*, No. 47226) is an interesting aroid which furnishes a peculiar starch used, as Mr. Swingle discovers, by the manufacturers of aeroplanes and also as a food in Japan. It is grown in the shade of orange trees there and should be tried as a source of starch in America.

Nuts from five selected African oil-palm seedlings (*Elaeis guineensis*, Nos. 47304–47308), coming from Dr. P. J. S. Cramer, of the Buitenzorg Plant-Breeding Station, show that selection is going to mean as much in this important tropical crop as it has in the grains and fruits of the temperate zone.

The clovers represent a group of such great agricultural importance that a new species like the one introduced from Natal (*Trifolium africanum glabellum*, No. 47321) is certain to attract its full share of attention. According to Mr. John Fisher, who sends it from Cedara, it has proved more vigorous than any imported species yet tried at Natal.

Job's-tears have commonly attracted only the attention of those who were looking for seeds from which beads can be made, but the ma-yuen (Nos. 47325 and 47326), a variety from Mindanao, has thin-walled seeds which, according to Mr. Wester, are used for food by the natives.

A relative of the chayote, the tacaco (*Polakowskia tacaco*, No. 47329) of Costa Rica, is a small fruit with a single large seed in it. Unlike the chayote, the fruits refuse to grow if put in the ground, whereas if put on top of the ground and covered with leaves they will sprout. Is there here a clue to some peculiarity worth investigation?

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, and the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 1, 1921.

INVENTORY.¹

46951 and 46952.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 2, 1919. Quoted notes by Dr. Trabut.

46951. BETA VULGARIS L. Chenopodiaceæ. Beet

"Variety *perennis*. The leaves may be eaten like spinach. It grows spontaneously in the north part of Africa."

46952. PHALARIS TRUNCATA Guss. Poaceæ. Grass

"For winter forage."

A perennial about 2 feet high, found in the Mediterranean region. The flowers are borne in a dense spike, resembling timothy. (Adapted from *Pereira Flora de Portugal*, p. 69.)

46953 and 46954. ORYZA SATIVA L. Poaceæ. Rice.

From Manchuria. Presented by Mr. A. A. Williamson, American consul at Dairen. Received January 3, 1919.

"Seeds of two varieties of dry or upland rice, received from the South Manchuria Railway Company and which were grown at the company's experiment station at Kungchuling. These two varieties are said to have given the best results yet obtained at that place, which lies about 400 miles north of Dairen in latitude between the 43d and 44th degrees, about on a line with Concord, N. H." (*Williamson*.)

46953. "A superior spring form of beardless dry-land rice (*chang ch'un wu mang liu tao*)."

46954. "A large-grained variety of dry-land rice bearded with deciduous awns (*tai ch'ing mao liu tao*)."

46955. PHALARIS COERULESCENS Desf. Poaceæ. Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received January 3, 1919.

"Seeds of a good forage grass. Our sheep, in summer time, know how to find the subterranean bulbous parts in the ground and live on them when all other vegetation is dried up." (*Trabut*.)

For previous introduction, see S. P. I. No. 22961.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by this office; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

46956. CHENOPODIUM NUTTALLIAE Safford. Chenopodiaceæ.**Huauhtzontli.**

From the City of Mexico, Mexico. Purchased from Mrs. Zelia Nuttall, Coyacan, Mexico. Received January 3, 1919.

"A form of chenopodium (huauhtzontli) having white or rose-colored seeds. [This shipment includes the] entire crop grown at the little village of Los Reyes, as well as that of an Indian woman in Coyacan. This is the finest kind of chenopodium, not at all bitter. The black kind [S. P. I. No. 45722] is slightly bitter, but the Indians say it is good for one's health and like it." (Mrs. Nuttall.)

For previous introduction, see S. P. I. No. 45536.

For an illustration of the fruiting heads of this plant, see Plate I.

46957. RUBUS GLAUCUS Benth. Rosaceæ.**Andes berry.**

From Palmira, Colombia. Presented by Mr. Charles J. Eder. Received January 11, 1919.

Seeds of a large-fruited berry called *Mora de Castilla*, which grows wild in the subtropical zone of Colombia at an altitude of 6,000 to 8,000 feet.

For previous introduction of cuttings from Mr. Eder, see S. P. I. No. 46800.

46958 to 46962. RIBES VULGARE Lam. Grossulariaceæ.**Garden currant.**

From Seine, France. Plants purchased from Nombrot-Bruneau, Bourg la Reine. Received January 4, 1919.

Plants of the following varieties introduced for experimental work being carried on in the Department.

46958. *Belle de Fontenay*.

46961. *Goudoin rouge*.

46959. *Cassis noir le Naples*.

46962. *Ambrée, couleur de chair*.

46960. *Goudoin blanche*.

46963 to 46967.

From Bahia, Brazil. Presented by Mr. H. M. Curran, through the Gray Herbarium, Cambridge, Mass. Received January 6, 1919.

These were received without information other than Mr. Curran's numbers.

46963. *SCHINOPSIS BRASILIENSIS* Engl. Anacardiaceæ.

Curran No. 233.

46964. *ACACIA* sp. Mimosaceæ.

Curran No. 234.

46965. *PITHECOLOBIUM UNGUIS-CATI* (L.) Benth. Mimosaceæ.

Curran No. 237.

A leguminous shrub or small tree with astringent bark and edible pods; the seeds have medicinal uses. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2652.)

For previous introduction, see S. P. I. No. 32916.

46966. *IPOMOEA FISTULOSA* Mart. Convolvulaceæ.

Morning-glory.

Curran No. 253.

46963 to 46967—Continued.

A subshrubby morning-glory with a branched stem, 4 to 10 feet height. The bell-shaped purplish to pinkish corollas are about 3 inches long. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1659.)

For previous introduction, see S. P. I. No. 37917.

For an illustration of this morning-glory in full bloom, see Plate I.

46967. MIMOSA sp. Mimosaceæ.

Curran No. 260.

46968. ABELMOSCHUS ESCULENTUS (L.) Moench. Malvaceæ. **Okra**
(*Hibiscus esculentus* L.)

From Avery Island, La. Presented by Mr. E. A. McIlhenny. Received January 6, 1919.

Seeds secured for cultural and other experiments in the investigation of okra seed as a possible commercial source of oil.

46969. ARGANIA SPINOSA (L.) Skeels. Sapotaceæ. **Argan tree**
(*A. sideroxylon* Roem. and Schult.)

From Algiers, Algeria. Presented by Dr. T. H. Kearney, United States Department of Agriculture. Received January 7, 1919.

"Seeds collected from an argan tree growing in the garden of the School of Medicine at Algiers." (*Kearney.*)

The argan tree is in many respects the most remarkable plant of southern Morocco; and it attracts the more attention as it is the only tree that commonly attains a large size and forms a conspicuous feature of the landscape in the low country near the coast. In structure and properties it is nearly allied to the tropical genus *Sideroxylon* (ironwood); but there is enough of general resemblance, both in its mode of growth and its economic uses, to the familiar olive tree of the Mediterranean region to make it the local representative of that plant. Its home is the sublittoral zone of southwestern Morocco, where it is common between the rivers Tensift and Sous. A few scattered trees only are said to be found north of the Tensift; but it seems to be not infrequent in the hilly district between the Sous and the river of Oued Noun, making the total length of its area about 200 miles. Extending from near the coast for a distance of 30 or 40 miles inland, it is absolutely unknown elsewhere in the world. The trunk always divides at a height of 8 or 10 feet from the ground and sends out numerous spreading, nearly horizontal branches. The growth is apparently very slow, and the trees that attain a girth of 12 to 15 feet are probably of great antiquity. The minor branches and young shoots are beset with stiff thick spines, and the leaves are like those of the olive in shape, but of a fuller green, somewhat paler on the under side. Unlike the olive, the wood is of extreme hardness, and seemingly indestructible by insects, as we saw no example of a hollow trunk. The fruit, much like a large olive in appearance, but varying much in size and shape, is greedily devoured by goats, sheep, camels, and cows, but refused by horses and mules; its hard kernel furnishes the oil which replaces that of the olive in the cookery of southern Morocco and is unpleasant to the unaccustomed palate of Europeans. (Adapted from *Hooker and Ball, A Tour in Morocco*, p. 96.)

For previous introduction, see S. P. I. No. 3490.



A NEW FOOD PLANT, THE HUAUHTZONTLI OF MEXICO. (CHENOPODIUM NUTTALLIAE SAFFORD, S. P. I. No. 46956.)

The unique inflorescence of this plant, in the stage shown in the photograph, is a favorite vegetable with the Mexican Indians. The flowering tips, or rather those on which seed is just beginning to ripen, are boiled or fried. These form, according to Mrs. Zelia Nuttall, for whom the plant was named, a very nutritious and appetizing dish. It should be tested in comparison with lamb's-quarters, of which it is a relative: (Photographed by Dr. W. E. Safford from a plant collected by Maximino Martinez, near the City of Mexico, Mexico, July, 1918.)



A STRIKING SUBSHRUBBY MORNING-GLORY FROM BRAZIL. (*IPOMOEA FISTULOSA* MART., S. P. I. No. 46966.)]

This handsome subshrubby plant is said by Mr. P. H. Dorsett to be a feature of the roadsides around Joazeiro, Brazil. It grows to a height of 8 or 10 feet and produces its lavender-pink flowers in great profusion. The bell-shaped corollas are about 3 inches long. (Photographed by P. H. Dorsett, Joazeiro, Bahia, Brazil, February 24, 1914; P14943FS.)

46970 to 46972. RIBES VULGARE Lam. Grossulariaceæ.**Garden currant.**

From Langport, Somerset, England. Plants purchased from Kelway & Son. Received January 7, 1919.

The following varieties of garden currants have been purchased for experimental use in the Department.

46970. *Kelway's Somerset.*

46972. *Kelway's Latest of All.*

46971. *Kelway's Eclipse.*

46973 and 46974.

From Ecuador. Presented by Dr. J. N. Rose, associate curator, United States National Herbarium. Received January 10, 1919.

46973. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. Algaroba.
(*P. juliflora* Swartz.)

"Seeds of the mesquite, called algaroba, which in Ecuador is a very common shrub or tree on the dry parts of the coast. The pods, which are produced in great abundance, are very sweet and form a staple food for horses, mules, and cattle. The wood is very hard and of a dark-brown color. It makes fine fence posts, tool handles, the very best of charcoal, and is an important firewood on railroad engines." (*Rose.*)

For previous introduction, see S. P. I. No. 45165.

46974. HYMENOCALLIS sp. Amaryllidaceæ.

"Bulbs of *Hymenocallis* obtained through Mr. Alfred Cartwright, at Guayaquil. Mr. Cartwright states that this plant has beautiful white flowers with long, slender, almost filiform, pendent petals." (*Rose.*)

46975. PYRUS sp. Malaceæ.**Pear.**

From Canton, China. Fruits presented by Mr. G. Weidman Groff. Received January 14, 1919.

"Wild pear, known in Cantonese as *ye sha lu*. Collected on hills near Canton. A possible stock for pear." (*Groff.*)

46976. ORYZA SATIVA L. Poaceæ.**Rice.**

From Nanhsuchou, Anhwei, China. Presented by Mr. J. L. Buck. Received January 17, 1919.

"Early white fragrant rice (nonglutinous) from Hsinghwa (near Yengcheng) Kiangsu, China." (*Buck.*)

46977. CANAVALI ENSIFORME (L.) DC. Fabaceæ.**Jack bean.**

From China. Presented by Rev. J. E. Shoemaker, Yuyao, via Ningpo. Received January 23, 1919.

"A Chinese white bean of low-growing habit, which bears a mammoth pod." (*Shoemaker.*)

46978. PYRUS SEROTINA Rehder. Malaceæ.**Pear.**

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass.

Received February 7, 1919.

"Wilson No. 11162."

"This species seems to be most closely related to *Pyrus bretschneideri* Rehder, which is easily distinguished by the leaves being broadly cuneate at the base, by the smaller flowers, and by the yellow color of the fruit. Its leaves resemble closely those of *P. ovoides* Rehder, so that it seems impossible to distinguish these two species with certainty without flowers or fruits; in fruit, however, the persistent calyx of the ovate yellow fruit of *P. ovoides* presents a good character, and the flowers of *P. ovoides* may be distinguished by the styles being pubescent at the base. This species was introduced by E. H. Wilson in 1909. This pear and probably other brown-fruited species are called by the Chinese *tang-li*." (*Proceedings of the American Academy of Arts and Sciences*, vol. 50, No. 10.)

For previous introduction, see S. P. I. No. 46702.

46979. PYRUS KAWAKAMII Hayata. Malaceæ.**Pear.**

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received January 20, 1919.

(Wilson No. 10876.)

"This pear is a native of the island of Formosa and resembles *Pyrus lindleyi*, from which it differs in having the leaves acute at both ends. The punctate, reddish fruits are globose and about one-third of an inch in diameter. (Adapted from *Journal of the College of Science of the Imperial University, Tokyo*, vol. 30, p. 99.)

46980. TAIWANIA CRYPTOMERIOIDES Hayata. Pinaceæ.

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received February 7, 1919.

(Wilson No. 10853.)

"The loftiest tree [in the forests of Formosa] is the *Taiwania*, which rears its small moplike crown well above all its neighbors. The average height of this tree is from 150 to 180 feet, but specimens exceeding 200 feet are known. The trunk is sometimes as much as 30 feet in girth, quite straight and bare of branches for 100 to 150 feet. It is a strikingly distinct tree, singularly like an old *Cryptomeria*, and both trees suggest gigantic *Lycopods*. In the dense forests the crown is small, dome shaped or flattened, the branches few and short, and one wonders how so little leafage can support so large a tree. When the top is broken by storms, the lateral branches assume an erect position. In the more open forest the branches are massive and wide spreading, the crown oval or flattened, and on small trees the branchlets are often pendent. The *Taiwania* sheds its smaller inner branches as do *Cryptomeria*, *Cunninghamia*, and *Sequoia*." (*Journal of the Arnold Arboretum*, vol. 2, p. 35.)

46981. TIGRIDIA PAVONIA (L. f.) Ker. Iridaceæ. **Tiger flower.**

From Coyacan, Mexico. Bulbs and seeds presented by Mrs. Zelia Nuttall, through Wilson Popenoe. Received January 23 and 27, 1919.

"*Cacomite*. Among the plants used as food by the ancient Mexicans, the *cacomite* is one which has received comparatively little attention in modern times.

"This species is common on the slopes of the valley of Mexico, and is still used by the Indians to a limited extent. Doubtless, it was of much greater importance as a foodstuff in ancient times than it is to-day. Mrs. Nuttall has planted in her garden a number of bulbs gathered on the hillsides near her home and has found that they multiply rapidly and require no cultural attention. When in bloom, the plants are beautiful, their flowers varying from yellow to deep scarlet in color. As an ornamental plant the *Tigridia* is already known in other countries, but the use of its bulbs as an article of food is not common outside of Mexico. When fully developed, the bulbs are slightly less than 2 inches in diameter. For eating, they are usually boiled, or parboiled and fried. When boiled they are mealy and have a very agreeable flavor somewhat suggesting that of chestnuts.

"It is suggested by Mrs. Nuttall that the cacomite be given a careful trial in the southern United States as a root crop. When grown from seed it requires two seasons for the bulbs to reach maturity, but they demand very little cultural attention, and the ornamental character of the flowers should make the cultivation of the cacomite very attractive to those who are interested in new and rare vegetables." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 11627, Inv. 11, p. 63 ("Undetermined"), which has been identified as *Tigridia pavonia*.

46982. *TUTCHERIA SPECTABILIS* (Champ.) Dunn. Theaceæ.

From Hongkong, China. Presented by the Botanical and Forestry Department. Received January 23, 1919.

A handsome, ornamental small tree or shrub, indigenous to the island of Hongkong. The leaves are alternate, short petioled, coriaceous, and shining. The flowers are about 2½ inches in diameter, usually having seven white, roundish obovate petals. The fruit, which is the size of a small apple, retains at the base the persistent sepals, and contains several fairly large seeds. The plant flowers in May and fruits in November. (Adapted from *Champion, Transactions of the Linnean Society, vol. 21, p. 111.*)

For previous introduction, see S. P. I. No. 45720.

46983. *MANISURIS EXALTATA* (L. f.) Kuntze. Poaceæ. (*Rottboellia exaltata* L. f.)

From the Philippine Islands. Sent by Dr. W. H. Weston to the Office of Acclimatization and Adaptation of Crop Plants. Received January 9, 1919.

From fields near the experiment station farm, College of Agriculture, Los Banos, Philippine Islands. This seed was introduced for the use of the officials of the Office of Acclimatization and Adaptation of Crop Plants.

For previous introduction, see S. P. I. No. 39927.

46984. *PERSEA AMERICANA* Mill. Lauraceæ. Avocado. (*P. gratissima* Gaertn. f.)

From Ambato, Ecuador. Bud sticks collected by Dr. J. N. Rose. Numbered January, 1919.

"Avocado from Ambato. Fruit brownish to black, but sometimes green or red, 2½ to 4 inches long. A fine fruit but small." (*Rose*.)

"Budwood of an avocado from Ambato, with sassafras-scented leaves. This variety apparently belongs to the Mexican race. It is likely to be hardier than

most other varieties and should be tested in sections of the United States which are slightly too cold for avocados of the West Indian or Guatemalan races. It will probably prove to be a small-fruited variety of rich flavor, as the Mexican race usually produces fruits of this character." (*Wilson Popenoe.*)

46985 to 46999.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received January 23, 1919.

"I am sending you sample quantities of seeds of forage and fiber plants which arrived last week from the States of Matto Grosso and Amazonas. I happened to be at the botanical gardens when this collection arrived there, so I stayed and made you a little collection. These seeds were collected by Dr. Geraldo Kuhlmann, who is the collector of the Rondon Commission." (*Cardinell.*)

46985. *ABUTILON RAMIFLORUM* St. Hil. Malvaceæ.

"Fiber plant called *Uanchuma*, a very delicate fiber from Matto Grosso."

46986. *CROTALARIA FOLIOSA* Benth. Fabaceæ.

"Fiber plant from Matto Grosso, Brazil."

46987. *CROTALARIA MAYPURENSIS* H. B. K. Fabaceæ.

"From 'Pimento Bueno,' Matto Grosso. Grows on all soils."

46988. *HIBISCUS SPATHULATUS* Garke. Malvaceæ.

"Fiber plant from Matto Grosso."

46989. *PAVONIA PANICULATA* Cav. Malvaceæ.

"Fiber plant from the State of Amazonas, which grows on all alluvial sandy-clay soils."

46990. *SIDA RHOMBIFOLIA CANARIENSIS* (Willd.) Schum. Malvaceæ.

"Fiber plant from 'Barao de Capanema,' (linha telegraphica), Matto Grosso."

46991. *SIDA RHOMBIFOLIA SURINAMENSIS* (Miquel) Schum. Malvaceæ.

"Fiber plant from 'Pimento Bueno,' Matto Grosso."

46992. *TRIUMFETTA SEMITRILOBA* Jacq. Tiliaceæ.

"Fiber plant; seed collected at 'Presidente Penna,' Matto Grosso."

46993. *WISSADULA PERIPLOCIFOLIA* (L.) Griseb. Malvaceæ.

"Fiber plant from 'Barao de Melgaco,' Matto Grosso."

46994. *AXONOPUS* sp. Poaceæ.

Grass.

"From Matto Grosso."

46995. *AXONOPUS* sp. Poaceæ.

Grass.

"From Matto Grosso; on sandy-clay soil."

46996. *CASSIA FLEXUOSA* L. Cæsalpiniaceæ.

"Forage plant from 'Rio Sacre,' in the State of Matto Grosso."

46997. *ERAGROSTIS MAYPURENSIS* (H. B. K.) Steud. Poaceæ.

Grass.

"From Matto Grosso."

46985 to 46999—Continued.

46998. *ICHNANTHUS CALVESCENTS* (Nees) Doell. Poaceæ. Grass.

"Called *Papuan*, and considered the best forage plant in Matto Grosso."

46999. *PASPALUM MULTICAULE* Poir. Poaceæ. Grass.

"A good forage annual grown on all soils in Matto Grosso."

47000. *CICER ARIETINUM* L. Fabaceæ. Chick-pea.

From Mexico. Obtained through Mr. S. W. Augenstein, steward, Cosmos Club, Washington, D. C., from General Alvaro Obregon, Sinaloa, Mexico. Received January 31, 1919.

Chick-peas, or garbanzos, grown on the ranch of Gen. Obregon in the State of Sinaloa, Mexico. Immense quantities of this grain are grown in Mexico and shipped to Spain, where it forms a staple article of food.

47001. *DIOSCOREA ALATA* L. Dioscoreaceæ. Yam.

From Florida. Tubers of a yam growing at the Plant Introduction Field Station, Miami. Obtained April 7, 1905, from Mr. H. W. Steadman, Lemon City, Fla. Its previous history is unknown. Numbered for convenience in distribution. Received January, 1919.

"A white-fleshed yam of good quality, suitable for cultivation in southern Florida. It is thought to be identical with the Agua yam of the West Indies. The plant has been described as a rampant grower and a good yielder. A single tuber may weigh as much as 15 pounds. This yam may be baked or boiled and prepared in other ways, much like potatoes. It is best to pare before boiling. This variety is more moist than most others and, after boiling, usually may be mashed and beaten without milk. It is ivory white in color, but when beaten, after being boiled and mashed, it becomes nearly pure white." (R. A. Young.)

47002 and 47003. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Dasheen.

Tubers growing at the Plant Introduction Field Station, Brooksville, Fla. Numbered January, 1919, for convenience in recording distribution. Descriptive notes by Mr. R. A. Young.

47002. "*Sacramento*. From Sacramento, Calif. Procured by Mr. Peter Bisset in a Chinese store, under the name of 'China potato.' Received November, 1913. A dasheen similar in leaf characters to the *Trinidad* variety. The name *Sacramento* is given to it because the variety was obtained in that city. As compared with the *Trinidad* dasheen, the *Sacramento* variety has considerably fewer and larger tubers. Both corms and tubers are more regular in form, and when cooked they are generally lighter in color and are not so dry; this variety has much less flavor, however, than the *Trinidad* dasheen."

47003. "*Ventura*. From Ventura, Calif. Presented by Mr. L. B. Hogue, who obtained it several years previously from a local Chinese gardener. Received in March, 1916. The name *Ventura* is given to signify the place whence the variety was obtained. A variety of dasheen similar in general appearance to the *Trinidad* dasheen. The bases of the

47002 and 47003—Continued.

leafstalks and the buds of the corms and tubers are distinctly more reddish in color than in the latter variety, however. The quality is similar to that of the *Trinidad* variety."

47004. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.**

(*P. gratissima* Gaertn. f.)

From the City of Mexico, Mexico. Collected in the market by Mr. Wilson Popenoe, Agricultural Explorer for the Department of Agriculture. Received January 20, 1919.

"A small-fruited, Mexican avocado for growing stocks on which to bud the Guatemalan introductions and other choice varieties." (*Wilson Popenoe.*)

47005 and 47006. PENNISETUM SETOSUM (Swartz) L. Rich. Poaceæ. Grass.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received January 23, 1919.

47005. "Forage plant found on all soils in the State of Matto Grosso."

47006. "From Matto Grosso."

47007. COELOCOCCUS AMICARUM (Wendl.) W. F. Wight. Phœnicaceæ. Ivory-nut palm.

From Honolulu, Hawaii. Fruits presented by Dr. Harold L. Lyon, Experiment Station of the Hawaiian Sugar Planters' Association. Received January 23, 1919.

"These fruits were collected a few days ago on the premises of Mr. John Scott, of Hilo. Mr. Scott purchased fruits of this palm from a sea captain many years ago and succeeded in rearing one plant which is now a large, handsome palm, the only fruiting specimen in these islands." (*Lyon.*)

"A pinnate-leaved palm introduced into Guam from the Caroline Islands. The nuts are of an ivorylike texture and are exported from the Carolines to Germany for button making. The spheroid fruit, about 7 centimeters long and 8 centimeters in diameter, has a reddish brown, glossy, scaly shell. The surface of the seed is glossy, black, and thickly striped but not furrowed. The allied species of the Solomon Islands (*Coelococcus solomonensis*) has a straw-colored shell, and that of *C. vitiensis* of Fiji, which is not used in the arts, is yellow. The inflorescence of this genus has not yet been described. In some of the Solomon Islands the natives prepare sago from the pith of the species growing there. It is said to keep well and not to be injured by salt water, so that it is a valuable food staple to take with them on their canoe voyages." (*Contributions from the U. S. National Herbarium, vol. 9, p. 244.*)

47008. MILLETTIA RETICULATA Benth. Fabaceæ.

From Houston, Tex. Cuttings presented by Mr. Charles E. Hogans. Received January 24, 1919.

"Cuttings of a wistaria which, I believe, is rare in this country. It was given to me by a Japanese who had imported a few plants; he called it 'Formosan wistaria.' It blooms here in August, holds blooms for over 30 days, and the flowers are a dark red. It holds its leaves all winter if the weather is not extreme, and they are of a darker green than those of other varieties." (*Hogans.*)

47009. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Angola, Africa. Presented by Rev. M. W. Ennis, Cuma, Benguela.
Received January 28, 1919.

"Seed of kafir. From the ordinary native *ovasa*, which is white with a buff bloom, I selected certain heads which produced a red grain, and from the plants grown I selected a white strain (which seems to be a variety of the Blackhull kafir). This grows vigorously on any land suited to the growth of maize. People from the Cape say that it is the strongest growing kafir that they ever saw. It makes a good flour which is not as liable to discoloration when used in baking as the flour made from the ordinary kafir. It requires a long season." *(Ennis.)*

47010 to 47015.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received January 27, 1919.

47010. CAPSICUM ANNUUM L. Solanaceæ.**Red pepper.**

"Seed of a very pungent, large, red pepper, originally from Costa Rica, that might prove superior to the ordinary chili. Seed should be saved for local distribution." *(Wester.)*

47011 to 47015.

"Spores of five ferns, probably *Cyathea*, *Marattia*, *Pteris*, and *Polypodium* spp. All these grow near sea level on Basilan in a hot, damp climate. The *Cyathea* and *Marattia* are especially attractive." *(Wester.)*

47011. CYATHEA sp. Cyatheaceæ.**Fern.****47012 and 47013. MARATTIA spp. Marattiaceæ.****Fern.****47014. POLYPODIUM sp. Polypodiaceæ.****Fern.****47012 and 47013, MARATTIA spp. Marattiaceæ.****Fern.****47016. SPIRAEA sp. Rosaceæ.****Spirea.**

From Chefoo, China. Presented by Mr. A. Sugden. Received January 27, 1919.

"Seeds of our big white spirea." *(Sugden.)*

47017 to 47057. Poaceæ.**Grasses.**

From Para, Brazil. Presented by Sr. André Goeldi through Mr. George H. Pickerell, American consul. Received January 7, 1919. Quoted notes by Mr. Goeldi.

"These species of grasses form the gramineous covering of the campos of Marajo Island."

[The economic value of most of these grasses is unknown. They will be tested by the agronomists of the United States Department of Agriculture.]

47017. ANDROPOGON BREVIFOLIUS Swartz.

"No. 19."

47018. AXONOPUS AUREUS Beauv.

"No. 23."

47017 to 47057—Continued.

47019. *AXONOPUS COMPRESSUS* (Swartz.) Beauv.

"No. 14."

47020. *AXONOPUS* sp.

"No. 15."

47021. *CHAETOCHELOA IMPRESSA* (Nees) Hitchc. and Chase.

"No. 16."

47022. *CHAETOCHELOA* sp.

"No. 21. Not native in Marajo. I found this kind growing in plant pots and plant boxes which contained fruit trees brought from the city of Para. Even in Para itself this species is not native and I have never found it on any of my collecting trips."

47023. *ERAGROSTIS GLOMERATA* (Walt.) L. H. Dewey.

"No. 36."

47024. *ERIOCHLOA* sp.

"No. 26."

47025. *HOMALOCENCHRUS HEXANDRUS* (Swartz) Kuntze.

"No. 18."

47026. *LEPTOCHELOA VIRGATA* (L.) Beauv.

"No. 38."

47027. *MESOSEETUM LOLIIFORME* (Hochst.) Chase.

"No. 13."

47028. *OLYRA LATIFOLIA* L.

"No. 41."

47029. *ORYZA LATIFOLIA* Desv.

"No. 1. A kind of native rice, growing on not inundated soil in Marajo. It is an interesting kind for several reasons. In the first place, it is the tallest I ever heard of, growing sometimes to a height of 8 feet. In the second place, it is a perennial kind, growing in large isolated bunches for several years, flowering and bearing seeds the whole year round. Its leaves are very broad. The kernels may not have any industrial or culinary value, but as a cattle feed the green plant might be useful. Besides this, I consider this kind interesting from a phytogeographical standpoint, demonstrating that real native kinds of rice are to be found in the Amazonian region."

47030. *PANICUM AQUATICUM* Poir.

"No. 20."

47031. *PANICUM MAXIMUM* Jacq.

"No. 24. A guinea grass of gigantic growth, completely different from the common one we have here. The common guinea grass has narrow leaves and reaches to a height of about 4 feet. This kind is stronger and much taller, having a very broad leaf and reaching a height of 7 or more feet. It is not a native grass of this country, but was introduced from Jamaica in soil which was packed around banana suckers, growing among the banana trees and especially where the suckers had been laid down before planting."

47032. *PANICUM MAXIMUM* Jacq.

"No. 25. The common guinea grass; introduced, not native."

47017 to 47057—Continued.

47033. *Panicum pilosum* Swartz.

"No. 33."

47034. *Paspalum conjugatum* Berg.

"No. 35."

47035 to 47037. *Paspalum densum* Poir.

47035. "No. 6. An interesting kind. When it is flowering or even bearing ripe seeds, the whole flower or seed bunch secretes a thick sweet siruplike liquid in considerable quantity, which is much sought after by wasps, ants, bees, and other sweet-liking insects."

47036. "No. 7."

47037. "No. 27."

47038. *Paspalum denticulatum* Trin.

"No. 28."

47039. *Paspalum larranagai* Arech.

"No. 5. Not native in the Amazonian region, but introduced."

47040 to 47042. *Paspalum millegranum* Schrad.

47040. "No. 3."

47042. "No. 29."

47041. "No. 22."

47043 to 47049. *Paspalum plicatulum* Michx.

47043. "No. 8."

47047. "No. 17."

47044. "No. 9."

47048. "No. 30."

47045. "No. 10."

47049. "No. 31."

47046. "No. 11."

47050. *Paspalum virgatum* L.

"No. 39."

47051 to 47054. *Paspalum* sp.

47051. "No. 2."

47053. "No. 32."

47052. "No. 12."

47054. "No. 42."

47055. *Pennisetum setosum* (Swartz) L. Rich.

"No. 34."

47056. *Syntherisma* sp.

"No. 40."

47057. *Valota insularis* (Elmg.) Chase.

"No. 37."

47058. *Dolichos lablab* L. Fabaceæ.

Bonavist bean.

From West Indies. Presented by the Cotton Research Department, St. Vincent, through Mr. S. Cross Harland. Numbered February, 1919.

"Seed of a bush form of *Dolichos lablab*. The seeds are white, and the eating qualities are distinctly good. Under our conditions the plants commence to bloom in about 5 weeks from sowing, and the whole crop is over in about 10 weeks." (Harland.)

47059. OXALIS CRENATA Jacq. Oxalidaceæ.

From Paris, France. Tubers presented by Mr. Stuart R. Cope. Received January 31, 1919.

"I am sending you a couple of tubers of *Oxalis crenata*, which has recently made its appearance in the markets here as a vegetable. It is directed to be cooked as crosnes (*Stachys tuberifera*), which is a common vegetable here and usually fried in fat, but I am informed that this *Oxalis* may also be boiled and mashed like turnips." (Cope.)

47060. MIKANIA sp. Asteraceæ.

From Oran, Argentina. Presented by Mr. S. W. Damon. Received January 23, 1919.

"Seeds received from Antonio de Llamas, Corrientes, Province de Corrientes, in reply to my request for seeds of *Stevia rebaudiana*, who says, 'I am sending you seeds of a plant called *yerba dulce, caà-eeba, nungà-catu* (sweet herb) from Curuguati. I doubt that they are *Stevia*. They remind me of the genus *Mikania*.'" (Damon.)

47061 to 47092.

From Paris, France. Purchased from Vilmorin-Andrieux & Co. Received January 31, 1919.

Peas introduced for the specialists of the United States Department of Agriculture, who are experimenting with disease-resistant varieties.

47061. PISUM ARVENSE L. Fabaceæ. Field pea.
Nain mange-tout à large cosse.

47062 to 47092. PISUM SATIVUM L. Fabaceæ. Garden pea.

47062. Quarante deux de Sarcelles.

47063. Michaux de Hollande.

47064. Michaux de Ruelle.

47065. Michaux ordinaire.

47066. Merveille d'Etampes.

47067. Serpette améliorée à longue cosse.

47068. Sabre.

47069. De Clamart.

47070. Gros carré vert Normand.

47071. Colosse.

47072. Ridé gros blanc à rames.

47073. Nain à chassis très hâtif.

47074. Nain très hâtif d'Annonay.

47075. Du Chemin longue.

47076. Nain très hâtif Gontier à grain vert.

47077. Très nain Couturier.

47078. De Clamart nain hâtif.

47079. Petite Merveille.

47080. Sans parchemin hâtif longue cosse.

47081. Sans parchemin beurre.

47082. Mange-tout à rames grain vert.

47061 to 47082—Continued.

47083. *Sans parchemin corne de blier.*
 47084. *Sans parchemin de St. Desirat.*
 47085. *Sans parchemin trs nain htif a chssis.*
 47086. *Nain mange-tout De Barbieux.*
 47087. *Prince Albert.*
 47088. *Le Bienfaiteur.*
 47089. *Caractacus.*
 47090. *Delices des gourmets.*
 47091. *d'Auvergne (Pois serpette).*
 47092. *Serpette vert.*

47093 and 47094. *PYRUS COMMUNIS* L. Malace. Pear.

From St. Petersburg, Fla. Cuttings presented by Mr. Martin Campas.
 Received February 4, 1919.

47093. "I was favorably impressed with this pear. It is attractive in appearance, in texture, and in quality. It seemed to me to be a very great improvement over the Kieffer and over any other variety that I know of which is adapted to the far South. If the tree is satisfactory and is reasonably resistant to blight, it seems to me that there may be something in this variety which would be worth considering very carefully in connection with the planting of pears in the South."
(H. P. Gould.)

47094. Another pear highly recommended by the sender.

47095 to 47101.

From Johannesburg, Africa. Presented by Mr. J. Burt Davy. Received February 4, 6, 7, and 10, 1919.

47095. *ACOKANTHERA VENENATA* (Thunb.) Don. Apocynace.

"Along the coast at Kuyona, South Africa." *(Davy.)*

This shrub or gnarled tree, sometimes 14 feet high, is a native of the coast region of South Africa, and is usually found along streams. It bears axillary corymbs of small, white to pink, sweet-scented flowers and globose purplish black fruits 1 inch in diameter. The thick, coriaceous leaves are ovate to lanceolate and from 1 to 4 inches long. The root is used by the natives for poisoning arrows. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 4, sect. 1, p. 500.*)

47096. *ALLIUM CEPA* L. Liliace.

Onion.

"Yellow Cape onion." *(Davy.)*

47097. *ANNONA CHERIMOLA* Mill. Annonace.

Cherimoya.

"Grown at Maritzburg, Natal, South Africa (Warm Temperate Zone)."
(Davy.)

47098. *LAGENARIA VULGARIS* Seringe. Cucurbitace.

Gourd.

"Markalas." *(Davy.)*

47099. *MIMUSOPS CAFFRA* E. Meyer. Sapotace.

A somewhat hoary or glaucous evergreen tree or shrub forming a large proportion of the sea-dune vegetation, but also extending inland

47095 to 47101—Continued.

on sandy soils. On the dunes it grows down to the water line, fully exposed to sea winds, and where these winds prevail is consequently usually dwarfed and heavily branched from the base. In shelter it gets up to about 10 meters in height and 30 to 45 centimeters in diameter, but even there it is heavily branched and very gnarled and crooked, and consequently yields first-rate knees, etc., for boat building. The leaves are firmly coriaceous and widely obovate. The flowers are usually in clusters of two to four in the axils along the branch. The fruit, which is red, is 2 centimeters long, tapers to a point, and is relished by children. Abundant along the coast and through Mchopes; also in Cape Colony and Natal. (Adapted from *Sim, Forest Flora and Forest Resources of Portuguese East Africa*, p. 80.)

47100. *RHOICISSUS ERYTHRODES* (Fres.) Planch. Vitaceæ.
(*Vitis erythrodes* Fres.)

A shrubby, suberect plant, native to Abyssinia. The leathery compound leaves are made up of three leaflets, the terminal one obovate, 2 to 3 inches long, the lateral ones broadly ovate; all are smooth and deep green above, but covered with fine gray pubescence below. The scarlet flowers occur in small lateral cymes, and the globose fruits are about half an inch in diameter. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 401.)

47101. *TRITONIA* sp. Iridaceæ.

"Ornamental from the extreme south of Natal, on the Pondeland border." (*Davy*.)

47102 to 47107. Poaceæ.

Grasses.

From Pretoria, Union of South Africa. Presented by Mr. Alex Holm, Department of Agriculture. Received February 6, 1919. Quoted notes by Mr. Holm.

"Native grasses of the Transvaal."

47102. *ANDROPOGON* sp.

"No. 2. A useful fodder grain."

Received as *A. purpureo-sericeus* Hack., but it does not agree with the material of that species in the United States National Herbarium.

47103. *ARUNDINELLA ECKLONII* Nees.

"No. 3. A useful fodder grain."

47104. *CHLORIS GAYANA* Kunth.

Rhodes grass.

"No. 4. A useful fodder grain."

47105. *CHLORIS PETRAEA* Thunb.

"No. 5. A useful fodder grain."

47106. *CYMBOPOGON POLYNEUROS* (Steud.) Stapf.

"No. 1. Used commercially for the extraction of oil."

47107. *PENNISETUM RUPPELLII* Steud.

"No. 6. Is valuable horticulturally."

47108. ANNONA MURICATA L. Annonaceæ. Soursop.

From San Lorenzo, Colombia. Presented by Mr. M. T. Dawe. Received February 7, 1919.

"A variety from the Cauca Valley, with roundish fruits of moderate size." (Dawe.)

A small, evergreen, tropical American tree, about the size of a peach tree, with leathery, ill-smelling, glossy leaves, large flowers with fleshy exterior petals, and very large fleshy green fruits with white, juicy, pleasantly subacid pulp. It is commonly cultivated in the Tropics of the Old World. A fine drink is made from the juice, and excellent jelly and preserves are prepared from the pulp. It is easily propagated from seeds or by budding. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 292.*)

For previous introduction, see S. P. I. No. 45908.

47109 to 47114. ZEA MAYS L. Poaceæ. Corn.

From Rio de Janeiro, Brazil. Presented by Mr. H. A. Cardinell, Ministerio da Agricultura. Received February 6, 1919.

"A rather curious collection of corn grown by the various Indian tribes of the States of Matto Grosso and Amazonas. This corn came from an exhibit prepared by a commission from that district for the last national corn show held in Rio de Janeiro in August, 1918. The commission informed me that this corn is absolutely wild in Matto Grosso and the Indians have made no attempt at its improvement. The ears I am sending were grown by the Amazon Indians more than 1,500 kilometers (930 miles) from the Madeira River, which is a branch of the River Amazon and forms in part the boundary between the two above-named States; that is, it was brought 930 miles before it reached that river. This will give you an idea of the distance this corn traveled before reaching Rio de Janeiro." (Cardinell.)

47109. No. 1. Kernels yellow with dark-red streaks.

47110. No. 2. Kernels dusky brownish red.

47111. No. 3. Kernels tawny.

47112. No. 4. Kernels dusky red, almost black.

47113. No. 5. Kernels yellow with dark-red streaks.

47114. No. 6. Kernels pale yellow and small.

47115. ORYZA SATIVA L. Poaceæ. Rice.

From Nanssuchou, Anhwei, China. Presented by Mr. J. L. Buck. Received February 7, 1919.

"Red fragrant rice (nonglutinous) from Hsinghwa (near Yengcheng) Kiangsu, China." (Buck.)

47116 and 47117.

From Haiti. Presented by Mr. Chester J. Hunn, Ithaca, N. Y. Received February 8, 1919.

47116. ORYZA SATIVA L. Poaceæ. Rice.

"Rice paddy collected in Haiti in 1917, at a newly established experiment station conducted by the United States Marines a few miles south and west of Port au Prince." (Hunn.)

47116 and 47117—Continued.

47117. *ZEA MAYS* L. Poaceæ.

Corn.

"Corn collected in Haiti in 1917 at a newly established experiment station conducted by the United States Marines a few miles south and west of Port au Prince. This corn was selected from among the ear corn purchased for the animals, and the exact locality from which it came is unknown, except that it was in the southern peninsula to the west of a line drawn from Port au Prince to Jacmel." (*Hunn.*)

47118. *ARISTOLOCHIA RINGENS* Vahl. Aristolochiaceæ.

From Las Sabanas, Panama. Presented by Mr. G. F. Dietz. Received February 10, 1919.

"Seeds of a vine from Jamaica called '*gallito*.'" (*Dietz.*)

A tall, slender, twining, glabrous plant with broadly orbicular-reniform leaves dull pale green above and glaucous below. The flowers are 7 to 10 inches long, pale green, marbled and reticulated with black-purple. It is found in Venezuela and in the West Indies. (Adapted from *Curtis's Botanical Magazine*, pl. 5700.)

47119. *HIBISCUS SABDARIFFA* L. Malvaceæ.

Roselle.

From Ramrod Key, Fla. Presented by Mr. J. R. Fraser. Received February 10, 1919.

"In my experiments with the roselle, I observed one plant that seemed somewhat superior to the others, and after the first picking I let it mature its seed. The first picking yielded 8 pounds of fruit [the usual yield is 4 pounds of fruit per plant], and the second picking yielded 10 pounds of fruit, a total of 18 pounds per plant. The calyces on this plant were $2\frac{1}{4}$ inches in length and $1\frac{1}{2}$ inches in diameter at the base." (*Fraser.*)

For previous introduction, see S. P. I. No. 46001.

47120. *GARCINIA MANGOSTANA* L. Clusiaceæ.

Mangosteen.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received February 11, 1919.

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color, which, when cut, exposes the white segments, five, six, or seven in number, lying loose in the cup. The cut surface of the rind is a most delicate pink in color and is studded with small yellow points. The separate segments are between snow white and ivory in color, and are covered with a delicate network of fibers. As one poises the dainty bit of snowy fruit on his fork and looks at the empty pink cup from which it has been taken, he hardly knows whether the delicate flavor or the beautiful coloring of the fruit pleases him more. The texture of the mangosteen pulp much resembles that of a well-ripened plum, but is extremely delicate, and the flavor is quite indescribably delicious. This fruit produces no feeling of satiety, such as the banana and the mango do, for there is little substance to the delicate pulp." (*David Fairchild.*)

For previous introduction and further description, see S. P. I. No. 46204.

47121. CARDIOSPERMUM HALICACABUM MICROCARPUM Blume. Sap-
indaceæ. **Balloon vine.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received January 27, 1919.

"An annual climbing vine, native of Zamboanga, with balloonlike seed pods that, together with the delicate foliage, make the plant an attractive ornamental." (*Wester.*)

47122. RUBUS GLAUCUS Benth. **Andes berry.**

From Palmira, Colombia. Presented by Charles J. Eder. Received February 6, 1919.

"Seeds from Palmira, Valle, Republic of Colombia; altitude 6,000 feet; average temperature 65° F." (*Eder.*)

Mora de Castilla. This berry, which appears to grow wild, attains a size and shape comparable to that of our best cultivated varieties, and to my mind has a better flavor than any of them. (Adapted from *notes by Dr. F. M. Chapman.*)

Cuttings of this berry previously received were given S. P. I. No. 46800.

47123. ARTHROSTYLIDIUM CAPILLIFOLIUM Griseb. Poaceæ.
Climbing bamboo.

From New Providence, Bahama Islands. Plants presented by Father C. N. Field and Mr. W. F. Doty, American consul, Nassau. Received February 11, 1919.

"A climbing bamboo, 15 meters or more in height, repeatedly branching, swinging down from the trees in great curtains or festooning lower growth, with the linear or filiform blades crowded on short sterile branchlets, these arranged in dense whorls like great pompons at the nodes." (*Contributions from the U. S. National Herbarium, vol. 18, p. 397.*)

47124. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. **Oil palm.**

From Buitenzorg, Java. Presented by the director, Botanic Gardens. Received February 12, 1919.

This palm is very important economically. The fruit is used by the natives for food; an intoxicating drink is made from the juice of the stem; the leaf stalks and leaves are used for thatching the native houses; and the fleshy outer layer and the kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. It is a native of west tropical Africa and occurs over immense areas both wild and in cultivation. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, p. 538.*)

Dorsett, Shamel, and Popenoe, in Department of Agriculture Bulletin No. 445, mention the uses of this tree in Brazil, and in regard to the oil from the pulp say: "Dendé oil is an important food product, entering into the preparation of a number of dishes, some of which, such as vatapá, are considered peculiar to the region. While utilized by all classes of people, its greatest popularity is among the negroes, long familiarity having made dendé oil almost as indispensable to them as olive oil is to the Spaniard."

For previous introduction, see S. P. I. No. 45766.

47125. IPOMOEA COPTICA (L.) Roth. Convolvulaceæ.*(I dissecta Willd.)***Morning-glory.**

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 13, 1919.

A slender, trailing, annual vine generally distributed throughout the Tropics. The digitate leaves, 1 to 2 inches across, are divided into five deeply pinnatifid segments. The large, white flowers, often 6 inches long, are borne singly or in clusters of two or three. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sect. 2, p. 176.*)

47126. SALVIA HISPANICA L. Menthaceæ.**Chia.**

From San Luis Potosi, Mexico. Procured by Mr. Cornelius Ferris, jr., American consul. Received February 13, 1919.

"This seed was obtained in the semitropical region of the State of San Luis Potosi and is known simply as *chia*. It is the kind used in making the drink called *chia*." (*Ferris.*)

For previous introduction, see S. P. I. No. 46645.

47127. CROTALARIA INCANA L. Fabaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received February 14, 1919.

"A bushy, half-shrubby legume forming plants 3 to 6 feet high and 2 to 4 feet across. Flowers yellow." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 31593.

47128 and 47129. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

From Harbin, Manchuria. Presented by Mr. Lewis S. Palen. Received February 17, 1919. Quoted notes by Mr. W. J. Morse.

47128. "Straw-yellow soy beans obtained from Peiliatze, Manchuria."

47129. "Early black soy beans obtained from Peiliatze, Manchuria."

47130 and 47131. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.

From Harbin, Manchuria. Presented by Mr. Charles H. Tuck. Received February 17, 1919. Quoted notes by Mr. W. J. Morse.

47130. "Early yellow soy beans grown in the vicinity of Harbin."

47131. "Early black soy beans grown in the vicinity of Harbin."

47132 to 47145. PRUNUS SERRULATA Lindl. Amygdalaceæ.**Flowering cherry.**

From Yokohama, Japan. Cuttings purchased from the Yokohama Nursery Co. Received February 18, 1919.

The following descriptions are either adapted from Miyoshi, "Japanische Bergkirschen," Journal of the College of Science, Tokyo, vol. 34, art. 1, or quoted from Wilson, "The Cherries of Japan." The times of flowering noted in the descriptions from Miyoshi, of course, are for Japan.

47132. "*Aryake*." Branches brown-gray, young leaves yellow-brown, inflorescence in two to four flowered long-pedunculate false umbels, blossoms white or delicate pink. Single and slightly double blossoms ap-

47132 to 47145—Continued.

pear on the same tree. Blossoms in mid-April. (*Miyoshi*, p. 98, under *P. serrulata* Lindl. forma *candida*.)

"Flowers pale pink, single or semidouble, very large and fragrant. This is a very striking form." (*Wilson*, p. 51, under *P. lannesiana* forma *ariake*.)

47133. "*Choshuhizakura*." A medium-sized tree with spreading top, brown-gray twigs, deep-red young leaves, inflorescence in two to four flowered pedunculate umbels or corymbs, flowers 4 centimeters in diameter and uniformly rose color. The red young leaves and rose-colored flowers make this cherry very attractive. Blossoming time, mid-April. (*Miyoshi*, p. 121, under *P. serrulata* Lindl. forma *splendens*.)

"Flowers pink, single or semidouble. This form is of little horticultural interest." (*Wilson*, p. 51, under *P. serrulata* var. *sachalinensis* forma *choshiuhizakura*.)

47134. "*Fugenzo*." A medium-sized tree with long, pendent inflorescences, two green leaflets in the flower bud, and striking full-blown flowers, red at first but soon becoming white. The flower buds open one after another, thus prolonging the blossoming time usually to the 1st of May. I have seen the last flower as late as the 1st of June. (*Miyoshi*, p. 123, under *P. serrulata* Lindl. forma *classica*.)

"One of the most beautiful of all cherries and now well known in gardens under the name of James H. Veitch. The flowers are rose pink, and the variety is distinguished by the presence of two leafy carpels in the center of each flower. Its Japanese name is *Kofugen* or *Benifugen*, and this and its white form (*alborosea*) are the only kinds of Japanese cherries which have green and leafy carpels." (*Wilson*, p. 39, under *P. serrulata* var. *sachalinensis* forma *fugenzo*.)

47135. "*Horinji*." A small tree with dark-gray twigs, yellowish brown young leaves, and flowers with roundish petals, the outer rank pink, the inner rank white. Blossoming time from the middle to the end of April. (*Miyoshi*, p. 110, under *P. serrulata* Lindl. forma *decora*.)

"This is a very beautiful form, with clusters of pale-pink double or semidouble flowers." (*Wilson*, p. 40, under *P. serrulata* var. *sachalinensis* forma *horinji*.)

47136. "*Kanzakura*." "Flowers single, pale pink, and rather small. A curious cherry which blooms in late winter, hence its Japanese name *Kanzakura*, i. e., winter cherry." (*Wilson*, p. 31, under *P. serrulata* var. *spontanea* forma *praecox*.)

47137. "*Kokonoye*." A small tree with erect slender branches, light-gray twigs, brownish green young leaves, inflorescence in two to four flowered pedunculate umbels or false umbels with uniformly pink flowers. Blossoms in mid-April. (*Miyoshi*, p. 107, under *P. serrulata* Lindl. forma *homogena*.)

47138. "*Kongozan*." "Flowers pink, single. This form is of little horticultural interest." (*Wilson*, p. 52, under *P. lannesiana* forma *kongozan*.)

47139. "*Oshimazakura*." A large tree with young leaves delicate brown turning to green, green peduncles, green calyces, and large, white, fragrant flowers in four to five flowered corymbs. (*Miyoshi*, p. 42, under *P. mutabilis* forma *speciosa*.)

47132 to 47145—Continued.

"As it came under my observation in Japan, this cherry is quick-growing and obviously short lived. It makes a tree 6 to 10 meters tall with a trunk 1 to 2 meters in girth, and has thick spreading and ascending-spreading branches. The bark is pale gray and smooth even on old trees. The shoots are stout, usually with prominent lenticels, grayish at first and often passing to dull reddish purple before becoming finally pale gray. The leaves are glabrous and green, but as they open often have a more or less brownish, metallic luster; they are ovate or rarely obovate, abruptly caudate-acuminate, double-serrate, and the teeth are long-aristate. The flowers are fragrant, everywhere glabrous, white (pinkish in the bud) and may appear before or with the leaves; the peduncle is sometimes almost wanting; usually it is from 2 to 4 centimeters long, but occasionally it is 6 centimeters and even more in length. The scaly involucral bracts are slightly viscid, the bracts subtending the pedicels are green, obovate, glandular-ciliate and very prominent. The fruit is ovoid, black, and lustrous.

"In this cherry the peduncle is extremely variable in length, often on the same individual tree, but this character has no taxonomic value in this or any other Japanese species. Varieties and forms have been based on this character, which is not only inconstant, but may vary from year to year. Koidzumi has distinguished the wild plant under the name of *speciosa*, but I can not discover any differences between a series of specimens from wild trees and those from cultivated trees. Koehne says this plant is in cultivation in Europe under the name *P. serrulata yoshino*. In Japan the vernacular name Yoshino is applied to *P. yedoensis* Matsumura, and not to any form of *P. lannesiana*. Koidzumi gives the vernacular name of Ohyamasakura to the wild plant. The cultivated plant and its forms are known as *oshimazukura* or as *sakura*." (Wilson, p. 45, under *P. lannesiana* forma *albida*.)

47140. "*Ranzan*." "Flowers single, pink, on long slender pedicels. This is a very pleasing form." (Wilson, p. 52, under *P. lannesiana* forma *ranzan*.)

47141. "*Shirayuki*." A moderately large tree with numerous closely crowded, erect-spreading branches, smooth brown-gray twigs, yellowish-brown young leaves, and white flowers with hairy peduncles. Blossoming time, mid-April. (Miyoshi, p. 127, under *P. serrulata* Lindl. forma *nivea*.)

"With its large flowers this distinct form resembles *P. yedoensis* Matsumura, but the bracteoles show that it belongs to *P. serrulata* Lindl. The branches are erect-spreading and the flowers white, single or nearly so." (Wilson, p. 34, under *P. serrulata* var. *pubescens* forma *sirayuki*.)

47142. "*Shitoyefugen*." [No description of this variety has been found.]

47143. "*Surugadainioi*." A moderately large tree with brown-gray twigs, brownish red young leaves, and white, fragrant flowers. Blossoming time about the end of April. (Miyoshi, p. 132, under *P. serrulata* Lindl. forma *surugadai-odora*.)

"Flowers semidouble, fragrant, nearly white, pendulous on long slender pedicels. This is a late-flowering form." (Wilson, p. 51, under *P. lannesiana* forma *surugadai-odora*.)

47132 to 47145—Continued.

47144. "*Takinioi*." A medium-sized tree with spreading branches, brown-gray twigs, brown-red young leaves, flower buds with reddish tips, and white, fragrant flowers. Blossoming time about the end of April. (*Miyoshi*, p. 133, under *P. serrulata* Lindl. forma *cataracta*.)

"Flowers single, white, and very fragrant. The vernacular name [*takinioi*] signifies 'fragrance from cataract.'" (*Wilson*, p. 48, under *P. lannesiana* forma *cataracta*.)

47145. "*Ukonzakura*." A middle-sized tree with light yellow-green flowers, the outermost petals of which are pinkish on the outer surface. Blossoming time the last of April. A subform *luteoides* of lighter yellow-green color (*Asagi*) is found in Kohoku. (*Miyoshi*, p. 124, under *P. serrulata* Lindl. forma *luteovirens*.)

"Flowers greenish yellow, semidouble or double. This is a very striking cherry with large flowers, borne in great profusion. The Japanese names are Ukon and Asagi." (*Wilson*, p. 56, under *P. lannesiana* forma *grandiflora*.)

47146. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(*Pachyrhizus angulatus* Rich.)

From Miami, Fla. Collected by Mr. Edward Simmonds, Plant Introduction Field Station. Received February 13, 1919.

"A twining, wiry stemmed plant with large tuberous roots, occasionally grown in the West Indies. It has also been tested in Florida, and has proved to be quite successful at Miami. Its roots, which sometimes become very large, contain much starch." (*Wilson Popenoe*.)

An analysis of the tubers by the United States Bureau of Chemistry gave the following percentages: Total solids, 15.01; ash, 0.53; alkalinity of ash (as K_2CO_3), 0.59; acid (as H_2SO_4), 0.06; protein ($N \times 6.25$), 1.34; crude fat, 0.21; sucrose, 1.81; invert sugar, 2.70; starch, 5.46; fiber, 1.36.

47147. COLOCASIA sp. Araceæ. Taro.

Found growing, without mark of identification, in the autumn of 1912 at the Plant Introduction Field Station, Brooksville, Fla. Possibly from Java. Numbered for convenience in distribution.

"This taro resembles the Trinidad dasheen in its habit of developing oval cormels, or lateral tubers, but differs materially from it in several important respects: (1) It is a better keeper; (2) the lateral tubers rarely send up leaf shoots, which makes the harvesting and cleaning of the crop easier; (3) the corms and tubers are much more moist and require a curing period of 6 or 8 weeks after harvesting before they are suitable for table use; (4) the flesh remains more nearly white when cooked; and (5) the flavor is even more mild than that of the Trinidad dasheen.

"Because of the necessity for a curing period, this taro is to be considered as one for late winter and spring use only. Since it is less dry and firm than the Trinidad dasheen, and has less tendency to darken after cooking, it is believed that in its proper season this variety will prove very popular on the market. The lateral tubers are much better baked than boiled." (*R. A. Young*.)

47148. LACTUCA SATIVA L. Cichoriaceæ. Lettuce.

From Khartum, North Africa. Presented by Mr. R. E. Massey, Government botanist, Central Research Farm, Sudan Government. Received February 20, 1919.

"A sample of lettuce seed which may interest you." (*Massey.*)

47149 to 47153.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received February 20, 1919.

47149. ACACIA IMPLEXA Benth. Mimosaceæ.

A tall Australian tree, 50 feet high, with light-green, sickle-shaped, lanceolate leaves 4 to 7 inches long, cream-colored flowers in short racemes, and light-brown pods 4 to 5 inches long, curved like an interrogation mark. The dark-brown, hard, close-grained wood is much used for turnery and for all purposes which call for tenacity and strength. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 186*, and from *Maiden, Useful Native Plants of Australia, p. 357.*)

For previous introduction, see S. P. I. No. 44321.

47150. CALLISTEMON RIGIDUS R. Br. Myrtaceæ.

"Bottle-brush plant; grows to a height of 4 to 6 feet." (*Baker.*)

A low shrub with linear, rigid leaves 2 to 5 inches long. The flowers are borne in dense spikes and the protruding stamens have brilliant crimson filaments an inch long, tipped with darker colored anthers. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 121.*)

47151. CALLITRIS CUPRESSIFORMIS Vent. Pinaceæ.

"Grows in sand ridges where there is a small rainfall. It is a fine tree." (*Baker.*)

"This pine is described by Col. W. V. Legge in a report on 'The Tasmanian Cypress Pine,' published [in 1911]. According to this paper, the tree is confined mainly to the coast, where it does well on poor soils. It seems to have a slow growth, but in time reaches a height of 100 feet and a diameter of about 2½ feet. In spite of the fact that it is chiefly a warm-climate tree, it also thrives in some of the colder parts of Tasmania where there is considerable frost. It has a plain whitish wood, without figure, and with little difference in color between the sapwood and the heartwood. Its grain is hard and close, and the wood is exceedingly durable. It is largely used for piles, telegraph poles, and in general construction work. It not infrequently grows in mixture with eucalypts, and when grown in the forest under moderate light conditions its form is that of a sharp cone which is tall in proportion both to the diameter and to the spread of the lateral branches. There are all gradations from this form to the spreading, bushy tree found in the open.

"Since Florida is apparently the region in the United States best adapted to this species, I would advise growing some at Miami for experimental planting in the Florida National Forest. Although the tree is widely used for a great variety of purposes in Tasmania, I doubt if it would prove superior to our own conifers and believe that the chief advantage in introducing it into Florida would probably be to furnish a comparatively soft, light wood for local use." (*Raphael Zon.*)

47149 to 47153—Continued.

Received as *Callitris rhomboidea*, for which we are now using the name given above.

For previous introduction, see S. P. I. No. 32071.

47152. INDIGOFERA AUSTRALIS Willd. Fabaceæ.

"Native indigo plant, a beautiful shrub, with violet flowers." (*Baker.*)

An erect-branching shrub 2 to 4 feet high, with pinnately compound leaves. The 9 to 11 leaflets, about three-fourths of an inch long, vary from nearly linear to almost orbicular, and the showy red flowers are borne in dense racemes. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 199.*)

47153. STERCULIA DIVERSIFOLIA Don. Sterculiaceæ.

"*Kurrajong.*"

Found in Victoria, New South Wales, and Queensland. Useful as human food, as a forage crop, and as a fiber plant. The taproots of young trees and the young roots of old trees are used as food by the aborigines; when boiled they have a flavor similar to that of turnips, but sweeter. The seeds of this and other species are edible, and make a good beverage. Cattle and sheep are fond of the leaves and branches and in some dry seasons have existed for long periods on scarcely anything else. In parts of the Riverina (New South Wales) the trees are cut down as required for this purpose. A strong fiber is obtained from the bark; it is used by the aborigines for making fishing nets, in both eastern and western Australia. (Adapted from *Maiden, Useful Native Plants of Australia, pp. 59, 140, and 633.*)

Received as *Brachychiton populneum*, which is now referred to the species named above.

47154. DACRYDIUM CUPRESSINUM Soland. Taxaceæ. Rimu.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received February 25, 1919.

"This 'pine' is one of the most beautiful objects in the New Zealand bush. Its pale-green, drooping branches differ from those of any other forest tree. The leaves are only small prickles, running up a long stem from which branch other small stems whose united weight causes the main stem to hang like the branches of the weeping willow. The whole tree, when young, has the appearance of a lycopodium. The fruit is tiny, but beautiful, the nut being blue-black and the cup red. The timber is of a red or yellow color and beautifully marked. It is used to great advantage in dadoes, panels, and for ceilings. The Taranaki rimu is especially straight in the grain and very resinous. It is much used for bridge building in that district." (*Laing and Blackwell, Plants of New Zealand, p. 74.*)

For previous introduction, see S. P. I. No. 46575.

47155 to 47160.

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Numbered February, 1919.

47155 to 47160—Continued.

47155. *PYRUS FAURIEI* C. Schneid. Malaceæ. Pear.

Wilson No. 11256.

An apparently thorny shrub with small leaves $2\frac{1}{2}$ to 3 centimeters long, smooth above and sparingly pubescent beneath, smooth young fruits about 4 millimeters through, and with the calyx fugacious. This species is very striking, because of its extremely small leaves, flowers, and fruit. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde* vol. 1, p. 666.)

47156. *PYRUS* sp. Malaceæ. Pear.

Wilson No. 11254. From Chosen (Korea).

47157. *PYRUS* sp. Malaceæ. Pear.

Wilson No. 11258.

47158. *PYRUS* sp. Malaceæ. Pear.

Wilson No. 11260.

47159 and 47160. *PYRUS USSURIENSIS* Maxim. Malaceæ. Pear.

47159. Long peduncled. Wilson No. 11262.

"In our work the wild *Pyrus ussuriensis* has shown greater resistance to pear-blight than any other species, and since this species also endures more cold than any other, it should prove of great value in breeding work." (*F. C. Reimer.*)

47160. Short peduncled. Wilson No. 11261. From Manchuria. See preceding number.

47161. *ROSA LAXA* Retz. Rosaceæ. Rose.

From Jamaica Plain, Mass. Plants presented by the Arnold Arboretum. Numbered February, 1919.

This rose, which is found from Turkestan to Songaria and Altai, is an upright shrub with paired hooked thorns. The leaflets are small and light green, and the flowers are small and white. The small fruits are oval oblong. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2998.)

47162. *MELINIS MINUTIFLORA* Beauv. Poaceæ. Molasses grass.

From Lavras, Minas Geraes, Brazil. Presented by Mr. Benjamin H. Huncutt, Director da Escola de Lavras. Received February 26, 1919.

"*Capim gordura roxa*, as this grass is called, literally means 'greasy purple grass.' I have seen *Capim gordura roxa* live down the wild fern that is such a plague in some districts and form a dense carpet between 3 and 4 feet thick upon which it was almost possible to walk. When riding or walking through it in the pasture under normal conditions one finds that the proportion of wax and grease on the blades is sufficient to thoroughly clean and polish his boots; this is no exaggeration, but is often remarked. The grass is not watery, but is unusually palatable to cattle and horses. The wax or grease, according to one analysis, totals as much as 3.22 per cent of the dry digestible matter. It is sensible to the fingers, which it makes quite sticky. I have not met it in any other country, and I believe that it is indigenous to the central part of Brazil, not thriving in the south nor in the sandier coast States of the north. It is fairly drought resistant, and comes up fairly well again after a fire. There is a related variety called *Capim gordura branco* of a bright

emerald-green color, but without the resistance of *roxa*. I have found both of the above grasses growing up to 2,000 meters on Caparao, one of the highest mountains of Brazil, and at 1,000 meters living down the wild fern; both these altitudes are subject to frost; I have also ridden through them on the uplands of Minas Geraes when they were coated with a dense white frost." (*R. T. Day.*)

For previous introduction, see S. P. I. No. 41148.

An illustration of a field of molasses grass is shown in Plate III.

47163. Cicer arietinum L. Fabaceæ.

Chick-pea.

From Mexico. Presented by Mr. S. W. Augenstein, steward, Cosmos Club, Washington, D. C. Received February 27, 1919.

"A large-seeded variety grown in Mexico." (*Augenstein.*)

47164. Paulownia fortunei (Seem.) Hemsl. Scrophulariaceæ.

From Japan. Presented by the Arnold Arboretum, Jamaica Plain, Mass. Received February 21 and 28, 1919.

(Wilson No. 11181.)

A magnificent tree, 30 to 60 feet high, much resembling the well-known *Paulownia imperialis* but having slightly shorter panicles of larger lilac or purple-tinted flowers dotted with purple on the inside of the corolla. A native of central Formosa. (Adapted from *T. Ito, Icones Plantarum Japonicarum, vol. 1, No. 3, p. 5, pl. 9.*)

Received as *Paulownia mikado*, for which we are now using the name given above.

47165. Psychotria undata Jacq. Rubiaceæ.

From Littleriver, Fla. Presented by Dr. V. K. Chesnut, Bureau of Chemistry, United States Department of Agriculture. Received February 28, 1919.

"Collected the last half of October, 1918, at Littleriver, Fla., by Prof. Charles T. Simpson." (*Chesnut.*)

For experimentation with other nitrogen-gathering rubiaceous plants at the Miami Plant Introduction Field Station, Miami, Fla. For a discussion of nitrogen-gathering bacteria in Rubiaceæ see note under *Pavetta zimmermanniana*, S. P. I. No. 45554.

47166 to 47172. Saccharum officinarum L. Poaceæ.

Sugar cane.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica. Received February 28, 1919.

"The following seeds came from Cuba." (*Calvino.*)

47166. Cuba 903.

47167. Cuba 904.

"The following seeds were sent to us from Barbados." (*Calvino.*)

47168. Ba. 6032.

47171. Ba. 7924.

47169. B. 6308.

47172. B. H. 10 (12).

47170. B. 7169.

47173 to 47184. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From Santiago de las Vegas Cuba. Presented by Dr. Mario Calvino director, Estacion Experimental Agronomica, through Dr. P. A. Yoder, of the Bureau of Plant Industry. Received March 4, 1919.

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| 47173. <i>C. 903.</i> | 47179. <i>C. 917.</i> |
| 47174. <i>C. 904.</i> | 47180. <i>C. 4.</i> |
| 47175. <i>C. 905.</i> | 47181. <i>C. 8.</i> |
| 47176. <i>C. 907.</i> | 47182. <i>C. 9.</i> |
| 47177. <i>C. 908.</i> | 47183. <i>C. 21.</i> |
| 47178. <i>C. 912.</i> | 47184. <i>903 de gorro.</i> |

47185 to 47193.

From Blackwood, South Australia. Presented by Mr. Edwin Ashby. Received March 4, 1919. Quoted notes by Mr. Ashby.

47185. *BOSSIAEA* sp. Fabaceæ.

"An upright-growing leafless shrub, with flattened ribbonlike stems and pea-shaped flowers all up the stem. Collected in the quarantine station at Sydney."

47186 and 47187. *CHORIZEMA ILICIFOLIUM* Labill. Fabaceæ.

47186. "A pretty shrub from Western Australia, about 3 to 4 feet high, with brilliant orange-red pea-shaped flowers. It blooms for many months in winter and spring."

47187. "Similar to the preceding number—with bright red and orange flowers. It blooms in the spring, but not over so long a period as the preceding number."

Received as *Chorizema grandiflora*, for which name a place of publication has not been found. It is apparently a large-flowered form of *C. ilicifolium*.

47188. *ERICA HOLOSERICEA* Salisb. Ericaceæ.

(*E. andromedaeflora* Andr.)

"This is a handsome and distinct species."

47189. *GREVILLEA LAVANDULACEA* Schlecht. Proteaceæ.

"This is a charming, shrubby plant which grows in sandy soil, about 1 foot high and from 1½ to 2 feet broad; it flowers very freely. This variety is better than the Victorian."

47190. *HIBISCUS HUEGELII WRAYAE* (Lindl.) Benth. Malvaceæ.

"From the Gawler Ranges, South Australia. A tall shrub bearing large mauve-colored flowers. This is the handsomest of all the Australian 'desert roses.'"

47191. *KENNEDYA COMPTONIANA* (Andrews) Link. Fabaceæ.

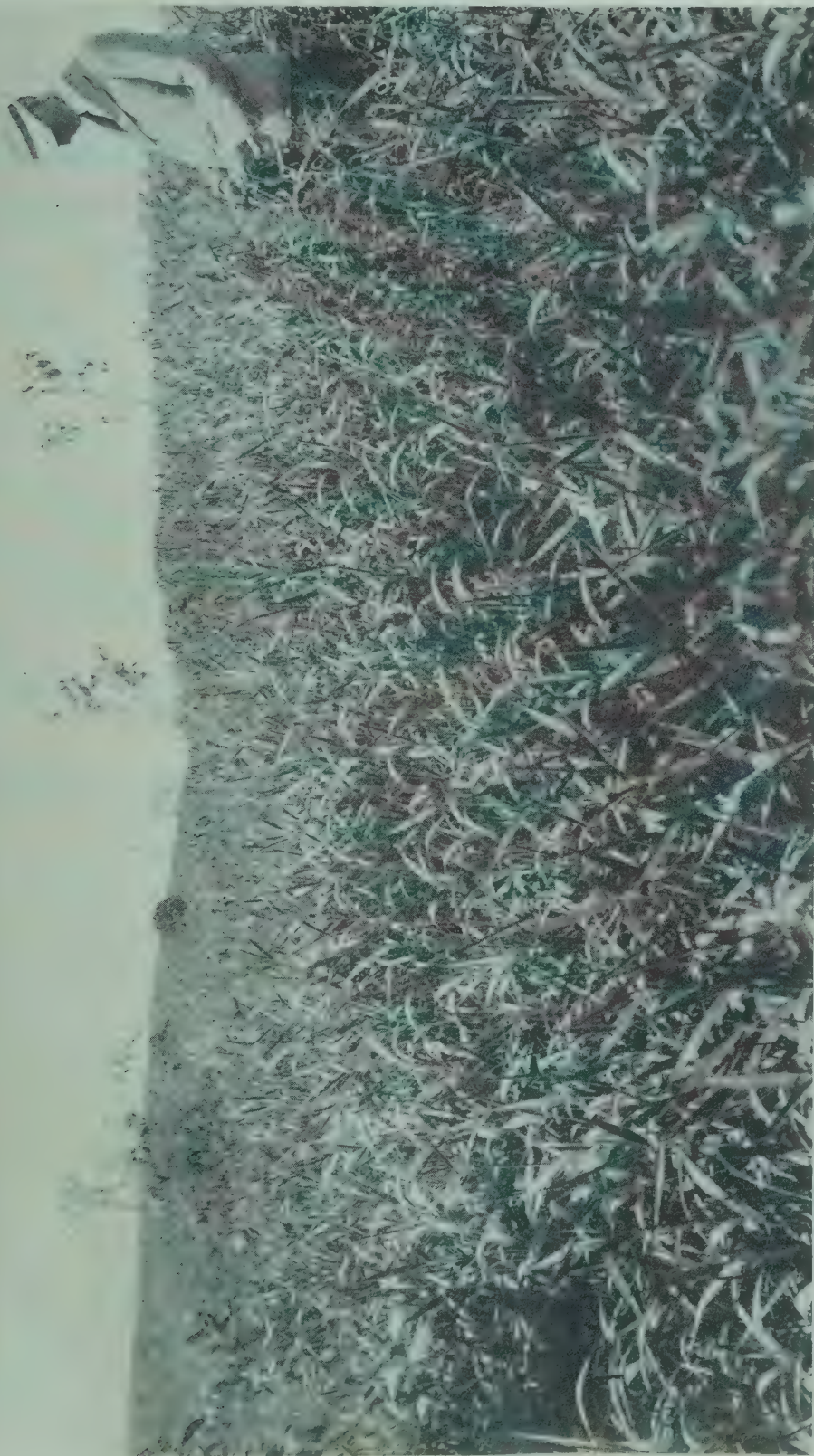
(*Hardenbergia comptoniana* Benth.)

"This is a fine climber. The sprays of flowers are very long and deep violet, and the leaves are more deeply cut than in the variety around Perth, Western Australia."

47192. *OLEARIA TERETIFOLIA* (Sond.) F. Muell. Asteraceæ.

(*Aster teretifolius* F. Muell.)

"A bright-green almost broomlike shrub, native of Kangaroo Island, this State. It grows to 5 feet in height and is covered with masses of



A FIELD OF MOLASSES GRASS IN BRAZIL. (MELINIS MINUTIFLORA BEAUV., S. P. I. No. 47162.)

This is the most important native pasture grass in Brazil, where it is known as *Capim melhado* and *Capim gordura*; it is also native to parts of Africa. Although it is naturally abundant as a wild plant in Brazil, it is also cultivated extensively and is considered a very valuable forage, especially for fattening stock. The grass grows to a height of 3 to 4 feet and is very leafy; the blades have a strong molasseslike odor and are very sticky. Molasses grass was first introduced into the United States in 1899. It is well adapted to Florida and Gulf Coast conditions and will survive cold well below the freezing point, though the herbage becomes blackened. For the southern half of Florida it has shown considerable value as a pasture grass and at present is being planted rather extensively. Cattle must first acquire a taste for this grass before they will eat it readily. At Chico, Calif., it grew well, but did not withstand the winter. It may prove valuable in southern California. (Photographed by P. H. Dorsett, Lavras, Minas Geraes, Brazil, January 20, 1914; P14658FS.)



A NEW RELATIVE OF THE CHAYOTE, THE TACACO OF COSTA RICA. (POLAKOWSKIA TACACO PITTIER, S. P. I. No. 47329)

A popular vegetable among the Costa Ricans, the tacaco, which is closely allied to the chayote (the mirliton of the New Orleans Creoles) has never been tried in the United States. It comes highly recommended as a delicious and palatable dish when prepared for the table by boiling or baking and can probably be used in as many diverse forms as the chayote itself. (Photographed by Wilson Popenoe, San Jose, Costa Rica, June 17, 1920; P17951FS.)

47185 to 47193—Continued.

small white flowers which give the bush when in flower a snowlike appearance. It stands clipping well and should make a good dwarf border hedge."

47193. TEMPLETONIA sp. Fabaceæ.

"A shrub which produces large pinkish flowers in winter; from Cottesloe Beach, Western Australia. It grows well in sand."

47194 to 47197.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 7, 1919. Quoted notes by Wilson Popenoe.

47194 and 47195. LANSIUM DOMESTICUM Jack. Meliaceæ. Langsat.

47194. "This, like the mangosteen, is a delicious oriental fruit not yet well established in America. While it is not so famous as the mangosteen, it is highly esteemed throughout the Malayan region and is praised by many travelers. Judging from our limited experience with it, the langsat is slightly hardier than the mangosteen, and there seems to be no reason why it should not succeed with us. A few plants have been grown in the West Indies and other parts of the American Tropics, but I have yet to hear of its fruiting outside the Orient. The langsat has two allies in America; one is the well-known umbrella tree (*Melia azedarach*) naturalized in the Southern States; the other is the tropical mahogany (*Swietenia mahagoni*). The genus *Lansium*, to which the langsat belongs, is a small one; and this species is the only one cultivated for its fruit.

"The tree is rather slender in habit, with a straight trunk and compound leaves composed of three or more pairs of elliptic to obovate leaflets 3 or 4 inches in length. The fruits, which ripen in the Straits Settlements from July to September, are produced in small clusters; in general appearance they suggest large loquats, the surface being straw colored and slightly downy. The skin is thick and leathery and does not adhere to the white, translucent flesh, which separates into five segments. The flavor is highly aromatic, at times slightly pungent. Each segment of the flesh normally contains an oval seed, but some of the segments in each fruit are usually seedless. The fruit is commonly eaten while fresh, but it is said also to be utilized in various other ways.

"The name *lanzon* is applied to this fruit in the Philippine Islands, but *langsat*, or *lanseh*, is the form used in the Malay Peninsula."

47195. "*Duku*, or *dockoe*. The duku, a fruit closely resembling the langsat, is commonly considered a botanical variety of *Lansium domesticum*."

47196 and 47197. NEPHELIUM LAPPACEUM L. Sapindaceæ. Rambutan.

"The rambutan is one of the commonest and at the same time most palatable fruits of the Malay Peninsula. Trees are to be seen in almost every garden in Singapore and Penang, and in its season the fruit is hawked everywhere in the streets.

"The tree grows to a height of about 40 feet and when in fruit is a handsome sight, the terminal clusters of bright crimson fruits being pro-

47194 to 47197—Continued.

duced on every branch. The compound leaves are made up of oblong-ovate leaflets, about 4 inches in length and $1\frac{1}{2}$ inches wide. In habit of growth the tree appears to be normally rather round topped and spreading, but as it is frequently planted among numerous other trees it is forced to grow tall and slender, branching only at a considerable height above the ground.

"According to J. D'Almeida Pereira, of Singapore, there are 8 or 10 varieties of the rambutan, the difference being in form and coloring. The natives, however, do not distinguish between any of these varieties. Among the varieties of the true rambutan the differences do not seem to be very well marked or of great importance.

"In appearance a cluster of rambutans, when highly colored, is exceptionally attractive. The best forms attain, when fully ripe, a rich crimson color, while the poorer ones are greenish or yellowish, sometimes a combination of these two and lacking any tinge of crimson. The individual fruits are slightly smaller than a hen's egg, but more elongated in form; they are covered with soft spines about half an inch in length, and are borne in clusters of rarely more than 10 or 12. The pericarp is not thick or tough, and to eat the fruit the basal end is usually torn off, exposing the aril. The flavor is mildly subacid and somewhat vinous. An oblong flattened seed is inclosed by the aril.

"A description of the rambutan, taking as a type one of the best forms, is as follows: General form oblong elliptical; weight averaging about 1 ounce; dimension, length $1\frac{5}{8}$ inches, breadth $1\frac{1}{8}$ inches; base rounded or slightly tapering; stem slender, short; peduncle 8 to 10 inches long, woody, medium stout, bearing 3 to 10 fruits; surface covered with slender, soft fleshy spines under half an inch in length; color when ripe, crimson or crimson maroon, yellowish when not fully ripe; pericarp one-sixteenth to one-eighth of an inch thick, firm, greenish, aril whitish, transparent, about one-fourth of an inch thick, meaty, very juicy, flavor subacid, vinous, pleasant; seeds one, large, oblong, compressed, pointed at the apex, the aril adhering to it closely. For inferior varieties about the only change to be made would be in the size and coloring of the fruit."

47196. *Pamboetan si kouto*.

47197. *Atjeh lebak boelaes*.

47198. *ABIES MARIESII* KAWAKAMII Hayata. Pinaceæ.

Fir.

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass.
Received February 21, 1919.

This differs from the type in having longer cylindrical cones and black seeds. *Abies mariesii* is a tree 40 to 50 (occasionally 80) feet high, of compact, pyramidal form; the young shoots are very densely covered with red-brown down which persists several years. The leaves, one-third to an inch long and one-twelfth of an inch wide, are dark shining green and deeply grooved above, glaucous beneath with two broad bands of stomata. The lower ranks spread horizontally, while the upper shorter ones point forward and completely hide the shoot. The egg-shaped cones, 3 to 4 inches long and about 2 inches wide, are purple when young. It is one of the rarest of the silver firs. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 123.)

47199. PICEA MORRISONICOLA Hayata. Pinaceæ. Spruce.

From Formosa. Presented by the Arnold Arboretum, Jamaica Plain, Mass.
Received February 28, 1919.

A spruce with smooth branches, linear leaves 6 to 16 millimeters long, and oblong-cylindrical cones about 6 centimeters long. It grows on the slopes of Mount Morrison, Formosa, at an altitude of 9,500 feet. (Adapted from *Journal of the College of Science, Tokyo, vol. 25, art. 19, p. 220.*)

47200 to 47202.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received February 25, 1919. Quoted notes by Mr. Wester.

47200. IPOMOEA sp. Convolvulaceæ Morning-glory.

"A white-flowered Ipomoea which should prove an addition to the ornamental flora of Florida and Porto Rico."

47201. MERREMIA sp. Convolvulaceæ.

"A purple-flowered Merremia which should prove an addition to the ornamental flora of Florida and Porto Rico."

47202. ZEA MAYS L. Poaceæ. Corn.

"A corn variety, discovered on a recent visit to Kudurangan, Cotabato, Mindanao, that matures 72 days from planting, and so may be of value to your corn breeders. This corn has been grown for many years (no one knows how many) by one of the wild tribes in Cotabato."

47203. LYCOPERSICON ESCULENTUM Miller. Solanaceæ. Tomato.

From Ottawa, Canada. Presented by Mr. W. T. Macoun, Dominion horticulturist, Central Experiment Farm. Received March 5, 1919.

"Tomato 1919, Alacrity A." (*Macoun.*)

47204 to 47212.

From Los Banos, Philippine Islands. Collected by Mr. Nemesio Catalan and presented by Dr. E. B. Copeland, of the college farm. Received March 6, 1919. Quoted notes by Mr. Catalan.

47204. ANTIDESMA BUNIUS (L.) Spreng. Euphorbiaceæ.

"*Bignay*. Collected from the college farm."

47205. CANARIUM LUZONICUM (Blume) A. Gray. Balsameaceæ.

"This tree is a source of the 'brea blanca' of commerce. The stone of the fruit (seed) contains an oily endosperm which is very good to eat. The plant is found in the forest at lower altitudes. Collected from Mount Maquilang."

47206. CORDIA BLANCOI Vidal. Boraginaceæ.

"*Anonang*. Collected from the college farm."

47207. ERYTHRINA VARIEGATA Stickin. Fabaceæ.

(*E. indica* Lam.)

"*Dapdap*. A tree with brilliant red flowers which form a very showy inflorescence. Collected on the college farm."

47208. KOORDERSIODENDRON PINNATUM (Blanco) Merr. Anacardiaceæ.

(*K. celebicum* Engl.)

47204 to 47212—Continued.

"*Amuguis*. A tree attaining a medium to large size, growing in the forest at lower altitudes. The wood falls under the third grade, according to Philippine classification. Collected at Mount Maquiling."

47209. *ORMOSIA CALAVENSIS* Azaola. Fabaceæ.

"*Bahai*. The seed is claimed to be of medicinal value for certain cases of stomach ache. The tree is found at lower altitudes in the forest. Collected from a tree on the college farm."

47210. *PAHUDIA RHOMBOIDEA* (Blanco) Prain. Cæsalpiniaceæ.

(*Afzelia rhomboidea* Vidal.)

"*Tindalo*. A tree that usually is found in somewhat open situations at low altitudes. The wood is very durable and beautifully colored; it is one of the best Philippine woods and is used for finer constructions. Collected from Mount Maquiling."

47211. *PREMNA CUMINGIANA* Schauer. Verbenaceæ.

"*Maguilic*. Collected from the college farm."

47212. *QUERCUS BENNETTII* Miquel. Fagaceæ.

Oak.

"*Pangan*. Collected on Mount Maquiling at an altitude of about 1,000 feet."

47213. *CORDEAUXIA EDULIS* Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Aden, Arabia. Presented by Mr. A. G. Watson, American vice consul.

Received March 1, 1919.

The yeheb nut is the fruit of a bush or small tree found in the Somaliland Desert in Africa. The compound leaves comprise 6 to 8 ovate-oblong, coriaceous leaflets about 1 inch long. On the under surface of the leaflets are peltate glandular hairs, which yield a red secretion that stains the hand when one bruises the foliage. The small flowers are borne in terminal corymbs and are followed by the coriaceous, 1-seeded pods. The ovoid seeds, which are 1 to 2 inches long, are greatly valued by the natives for food. The seeds are stewed in water and are preferred by the poorer classes to their usual diet of dates and rice. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1908, p. 36.)

The following analysis of the kernels gives a good idea of the food value of these nuts: "Moisture, 9.3 per cent; ash, 3.1 per cent; reducing sugar, 2.3 per cent; cane sugar, 21.6 per cent; carbohydrates (other than sugars), by difference, 37.1 per cent; albuminoid proteids, 11.8 per cent; amid proteids, 1.3 per cent; fiber, 2.7 per cent; oil, 10.8 per cent. Nutrient ratio, 1: 6.5; nutrient value, 92.

"The nuts were tested for alkaloids and glucosids, but no indication of the presence of such constituents was obtained.

"The results of the analysis indicate that the nuts are likely to prove a useful foodstuff. A satisfactory point is the presence of considerable quantities of sugars and oil.

"Judging from the analytical figures alone, the nutrient ratio, i. e., the ratio of albuminoids to carbohydrates and oil converted into their starch equivalents, is a very serviceable one, and the total 'nutrient value' is high. The kernels are rather tough, and this point raises some doubt as to the complete digestibility of the carbohydrates other than sugars.

"In preparing the nuts for use as food it is desirable that they should be soaked in just such a quantity of water as they can absorb, since if more be used there is danger of the loss of the sugars, which would diffuse into the excess of water." (*Kew Bulletin of Miscellaneous Information*, 1908, p. 43.)

47214 to 47220.

From Southern Nigeria, Africa. Presented by Mr. A. H. Kirby, assistant director of agriculture at Ibadan. Received March 6, 1919.

47214. *ANNONA SENEGALENSIS* Pers. Annonaceæ.

"Abo. No European production in any way represents the *Annona senegalensis* with its large, blue-green leaf and its small fruit. The fruit contains an aromatic, dark-red pulp, and in a modest degree displays something of that captivating quality which has exalted its kindred plant, the cherimoya of Peru, to its high repute as the queen of fruits. It must be owned, however, that it is difficult to obtain a well-developed example of this fruit, for so keenly is it spied out and devoured by the birds that often for months together it may be sought in vain." (Dr. George Schweinfurth, *The Heart of Africa*, p. 222.)

For previous introduction, see S. P. I. No. 46630.

47215. *CRACCA VOGELII* (Hook. f.) Kuntze. Fabaceæ.
(*Tephrosia vogelii* Hook. f.)

"Kassa," "Igum," etc. For vernacular names, see the work by Holland cited below.

"Used for stupefying fish . . . throughout tropical Africa. The methods adopted are much the same everywhere. The leaves and branches are pounded and thrown on the surface of the water, causing the fish to rise to the surface stupefied or dead a few minutes afterwards. They [the fish] are quite wholesome and fit for food.

"The following passage [extract from Report on Gonga Country by Inspector Armitage] gives an account of the use of 'kassa' in the Gonga Country: 'A stretch of about half a mile of water is dammed and any alligators in it killed; the people from the neighboring villages assemble, each bringing a bundle of kassa leaves which are beaten to a pulp, taken to the prepared stretch of water, and thrown in. Men then enter the water and splash about, and in about 10 minutes fish begin to appear on the surface and are collected in baskets or by hand. The largest fish are taken in this way. The skin of the men who enter the water into which the kassa has been thrown is affected by the latter and becomes rough, or, as they say, like a stick.'" (Holland, *Useful Plants of Nigeria*, pt. 2, p. 196.)

47216. *SPATHODEA CAMPANULATA* Beauv. Bignoniaceæ.

"Oruru."

A strikingly handsome tree, 20 to 70 or more feet high, with smooth white stem without branches for a considerable height from the ground and a luxuriant conical head of foliage, all studded with large flowers of a bright orange scarlet. One of the most beautiful trees in Angola, flowering from September to the end of May and fruiting in June and July. Suitable for avenue or as a shade tree. Grown from seed which is winged, light, and freely distributed by the wind. (Adapted from Holland, *Useful Plants of Nigeria*, pt. 3, p. 509.)

47217. *STROPHANTHUS GRATUS* (Wall. and Hook.) Baill. Apocynaceæ.

A handsome flowering plant; it may be propagated by seeds which are distinguished from the *Strophanthus* seeds of commerce (S.

47214 to 47220—Continued.

kombe Oliv.) by being glabrous. The seeds of this species are recommended for use in medicine in preference to those of any other, chiefly because they yield crystalline strophanthin, whereas the established official *Strophanthus* yields this glucosid in an amorphous condition. Used for poisoning arrows. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 447.*)

47218. STROPHANTHUS HISPIDUS A. DC. Apocynaceæ.

The seeds are an important drug, worth about 2 to 2½ shillings (48 to 60 cents) per pound wholesale, commonly shipped in the pods, but more often taken out, freed from the awns, and packed in bales. The seeds are poisonous, the active principle being strophanthin; used in Nigeria and generally in tropical Africa for arrow poison. It may be propagated by seed, but the commercial supply is obtained, so far, from wild plants, strong climbers making the seed difficult to collect, though, according to Dalziel, as a shrub with long lax branches it is capable of being grown in the neighborhood of towns and villages. The seed pods are available in October at Abepa, Kabba Province, where the plant is said to be plentiful. The seeds take several months to ripen. Billington reports collecting a pod in October, then not quite ripe, after noting its development for 10 months. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 448.*)

47219. SYNSEPALUM DULCIFICUM (Schum.) Daniell. Sapotaceæ.

"*Agbayun.*"

This tropical African tree flowers in the months of June, July, and August, and usually produces a number of oblong or oval berries which resemble olives; they are dull green at first, but gradually change, as they ripen, into a dusky red. The seeds are inclosed in a thin, soft, slightly saccharine pulp which, when eaten, has the peculiar property of making the most sour and acidulous substances seem intensely sweet, so that citric or tartaric acids, lime juice, vinegar, and all sour immature fruits eaten thereafter taste as if they were composed solely of saccharine matter. The duration of this effect depends upon the amount of berries eaten, and the degree of maturity they have attained; when a sufficient quantity has been taken their influence is commonly perceptible throughout the day. This peculiar principle, however, is soon dissipated if the fruits are suffered to remain in a ripe condition for a length of time; preserved fruits brought to England not only lost this property but became extremely insipid. The natives of the Gold Coast often use them to render their stale and acidulated kankies [maize bread] more palatable and to give sweetness to sour palm wine and pitto [beer made from maize]. (Adapted from *Pharmaceutical Journal, vol. 11, p. 446.*)

47220. VITEX GRANDIFOLIA Guerke. Verbenaceæ.

"*Orieta.*" Near the River Nun, *Vitex grandifolia* is a small tree with the habit of an *Aralia*, growing to a height of 25 feet. In Akwapim it is a shrub, 10 feet in height, with cream-colored flowers, found at an altitude of 1,000 feet. The fruit is edible, about the size of a small plum, and is made into a kind of honey. The wood is used for making large drums. (Adapted from *Holland, Useful Plants of Nigeria, pt. 3, p. 526.*)

47221 and 47222. BAROSMA CRENULATA (L.) Hook. Rutaceæ.
Buchu.

From Cape Town, South Africa. Presented by the Conservator of Forests.
 Received March 8, 1919.

A small evergreen shrub, with opposite or alternate, simple, dotted, leathery leaves, in the axils of which the flowers appear. The buchu leaves of commerce are procured chiefly from *Barosma crenulata*, *B. crenata*, and *B. serratifolia*. The leaves are much used in medicine as a stimulant and tonic and appear to have a specific effect in chronic diseases of the bladder, their action probably being dependent on the powerful-smelling volatile oil which they contain. (Adapted from *Lindley, Treasury of Botany*, p. 125.)

47221. Collected at French Hoek, Cape Province.

47222. Collected at Dluitjes Kraal, Ceres, Cape Province.

47223. KOKIA DRYNARIOIDES (Seem.) Lewton. Malvaceæ.

From Honolulu, Hawaiian Islands. Presented by Mr. J. F. Rock. Received March 10, 1919.

"From Pukoo, Japulehu, Molokai." (*Rock.*)

A tree, 4 to 8 meters high, woody throughout, with membranous, nearly glabrous, cordate, five to seven lobed leaves on long petioles, and bright red flowers, of silky texture, on stout peduncles, single in the axils of the uppermost leaves. The thick, woody, ovoid capsule, about an inch in length, contains several obovoid seeds which are covered with a reddish brown tomentum. Of this exceedingly interesting species there has been only one tree in existence up to a few months ago. This same tree, which was declared dead, still showed some signs of life and produced a few capsules with mature seeds; but this is evidently the last, only a small branchlet having produced a few leaves. A few seeds of this tree have been sent to Washington to the Bureau of Plant Industry [S. P. I. No. 39354]; thus it is hoped still to perpetuate this most interesting plant. Several trees were found on the west end of Molokai, at Mahana; all are now dead, owing to ravages of cattle, sheep, and goats, which eat off the bark and leaves. (Adapted from *Rock, The Indigenous Trees of the Hawaiian Islands*, p. 307.)

"Seeds from a seedling tree given to Mr. C. C. Conradt, of Pukoo, Molokai, in 1911. The tree has flowered and fruited this season for the first time; it bore five seeds—three of which I planted here, and two I have sent to you. The original tree on Molokai [parent of Mr. Conradt's tree] is dead." (*Letter of Mr. Rock, April 14, 1919.*)

47224. BARLERIA CRISTATA L. Acanthaceæ.

From Cairo, Egypt. Seeds presented by the director, Gizeh Branch, Ministry of Agriculture. Received March 11, 1919.

A tropical shrub, with axillary, or terminal, purplish blue or rarely white flowers in dense spikes. It is sometimes used as a bedding plant. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 454.)

47225. CARICA sp. Papayaceæ. Papaya.

From the Cauca Valley, Colombia. Presented by Mr. M. T. Dawe, San Lorenzo, Colombia. Received March 13, 1919.

"Seeds of 'papaw' collected in the Cauca Valley, January, 1919." (*Dawe.*)

"These seeds seem to belong to the same species as S. P. I. No. 41339 from Peru, and Nos. 46761 and 46945 from Colombia. They closely resemble those of *Carica candamarcensis*, but are nearly twice as large." (*H. C. Skeels.*)

47226. AMORPHOPHALLUS KONJAC Koch. Araceæ.

From Japan. Tubers collected by Mr. Walter T. Swingle, Bureau of Plant Industry, United States Department of Agriculture. Received March 13, 1919.

"Tubers of *Konyaku*. Starch from the tubers is used for food in Japan. During the war the starch prepared from this plant was exported to the United States. It is said to be used in treating airplane wings. In Japan this plant is grown under the shade of orange trees, and as it seems to be important both for food and as industrial starch, I am anxious to see what it will do in this country." (*Swingle.*)

47227. PYRUS COMMUNIS L. Malaceæ.

Pear.

From Algiers, Algeria. Cuttings presented by Dr. L. Trabut. Received March 13, 1919.

"*Kontoula* pear from Achaia. Grafts of an early pear which bears abundantly a very sweet little fruit which is quite fragrant. This vigorous tree, which rapidly attains large dimensions, appears interesting to me.

"In 1914, the Botanical Station received from Greece some grafts of a pear whose fruits are much esteemed in Elis and Achaia because of their earliness; it bears the name of *Kontopodaroussa* or *Kontoula*, attains large dimensions, and is remarkable for its great and regular fruitfulness.

"Grafted upon *Pyrus gharbiana*, a species native to Algeria and Morocco, it made good growth in 1915. In June, 1918, the erect branches were covered with fruits.

"This pear is of small size, with a short peduncle, beautiful yellow, fine, sugary, fragrant flesh, not softening; it ripens in June, and is much superior to other early pears of the same date." (*Trabut.*)

47228. SILYBUM EBURNEUM Coss. and Dur. Asteraceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received March 14, 1919.

"Thistle eaten when young by the natives." (*Trabut.*)

A form of blessed thistle (*Silybum marianum*), with the stems, nerves of the leaves, and bracts of the involucre an ivory white. It also differs from the typical form in having the spines on the tips of the involucre bracts very short or wanting. (Adapted from *Bulletin de la Société Botanique de France*, vol. 2, p. 366.)

47229. PHOENIX DACTYLIFERA L. Phœnicaceæ.

Date palm.

From Tripoli. Presented by Dr. E. O. Fenzi, director, Stabilimento Orticolo, Tripoli. Received March 15, 1919.

"*Tabuni*. Season, end of August to middle December. The commonest kind in the oases of Tripoli; fruit small to medium sized, olive shaped, with very thin skin, pulp fiberless and more sugary than *Bayudi* [S. P. I. No. 47302]." (*Fenzi.*)

47230 and 47231.

From Buitenzorg, Java. Presented by the director, Botanic Garden. Received March 17, 1919.

47230. *LANSIUM DOMESTICUM* Jack. Meliaceæ. **Langsat.**

For previous introduction and description, see S. P. I. No. 47194.

47231. *NEPHELIUM LAPPACEUM* L. Sapindaceæ. **Rambutan.**

Rambutan Atjeh Kouto.

For previous introduction and description of this species, see S. P. I. No. 47196.

47232 to 47260. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From London, England. Tubers presented by Mr. Lawrence Weaver, Commercial Secretary, Board of Agriculture and Fisheries. Received March 19, 1919.

"A collection of the principal varieties of potatoes which have been approved as immune from the wart disease." (*Weaver.*)

47232. <i>Abundance.</i>	47247. <i>Lochar.</i>
47233. <i>America.</i>	47248. <i>Majestic.</i>
47234. <i>Arran Comrade.</i>	47249. <i>Nithsdale.</i>
47235. <i>Arran Rose.</i>	47250. <i>Provost.</i>
47236. <i>Arran Victory.</i>	47251. <i>Rector.</i>
47237. <i>Bishop.</i>	47252. <i>St. Malo Kidney.</i>
47238. <i>Burnhouse Beauty.</i>	47253. <i>Shamrock.</i>
47239. <i>Dargill Early.</i>	47254. <i>Snowdrop.</i>
47240. <i>Edzell Blue.</i>	47255. <i>Templar.</i>
47241. <i>Golden Wonder.</i>	47256. <i>The Ally.</i>
47242. <i>Great Scot.</i>	47257. <i>The Duchess.</i>
47243. <i>Irish Queen.</i>	47258. <i>Tynwald's Perfection.</i>
47244. <i>Kerr's Pink.</i>	47259. <i>White City.</i>
47245. <i>King George.</i>	47260. <i>Witch Hill.</i>
47246. <i>Langworthy.</i>	

47261. PYRUS CALLERYANA Decaisne. Malaceæ. Pear.

From Nanking, China. Purchased through Mr. John H. Reisner, University of Nanking, at the request of Mr. W. T. Swingle, Bureau of Plant Industry. Received March 11, 1919.

Introduced for experiments being carried on to develop varieties of pears free from blight and also to be used for stock purposes.

47262. OXALIS CRENATA Jacq. Oxalidaceæ.

From Seekonk, Mass. Tubers presented by Mr. William B. Olney. Received March 20, 1919.

"Tubers of the edible *Oxalis crenata* blanc, the bulbs of which I obtained from France a few years ago." (*Olney.*)

47263. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Gotha, Fla. Tubers presented by Mr. Henry Nehrling. Received March 22, 1919.

"One of a mixed lot of good varieties of yams received from the Trinidad Department of Agriculture in April, 1918, and recorded under S. P. I. No. 45990. This variety was sent to Mr. Nehrling for propagation." (*Young.*)

47264 to 47295.

From Poitiers, France. Plants purchased from Viaud-Bruant. Received March 22, 1919.

47264 to 47272. RIBES NIGRUM L. Grossulariaceæ.**Black currant.**47264. *À fruits blancs ou gris (Cassis).*47265. *À fruits noir.*47266. *À fruits noir feuilles panachees.*47267. *Blanche de Werders.*47268. *Bang up.*47269. *Victoria.*47270. *Champion.*47271. *Merveille de la Gironde.*47272. *Royal de Naples.***47273 to 47295. RIBES VULGARE Lam. Grossulariaceæ.****Garden currant.**47273. *À fruits blancs (Grosseillers).*47274. *À fruits rouges.*47275. *Cerise à longue grappes, rouge.*47276. *Cerise Boisselot.*47277. *Cerise Goliath, rouge.*47278. *Cerise incomparable, rouge.*47279. *Cerise, rouge.*47280. *Comite.*47281. *De Holland, à longues grappes blanches.*47282. *De Holland, à longues grappes rouges.*47283. *Fertile d'Angers, rouge.*47284. *Grosse rouge de Boulogne.*47285. *Hâtive de Bertin rouge.*47286. *Imperial, à fruits blanches.*47287. *Kirsch, rouge.*47288. *Knight, rouge.*47289. *La Merveilleuse.*47290. *Marvin crystal blanc.*47291. *Ruby Castle, rouge.*47292. *Ruby Coster, rouge.*47293. *Sans Pepin, rouge.*47294. *Versaillaise blanche.*47295. *Versaillaise rouge.*

47296 to 47298. RUBUS STRIGOSUS × RUBRISSETUS. Rosaceæ.**Raspberry-dewberry.**

From College Station, Tex. Plants presented by Mr. H. Ness, horticulturist, Texas Agricultural Experiment Station. Received March 25, 1919.

A hybrid between *Rubus strigosus* (the Brilliant), a red raspberry, as the staminate parent, and *Rubus rubrisetus*, a dewberry, as the pistillate parent. The fruit is dark red to nearly black, and the flavor is mildly acid with a strong reminder of the raspberry—very superior to the blackberry. The drupelets adhere more to the core than in the raspberry. (Adapted from the *Journal of Heredity*, vol. 9, p. 338.)

47296. No. 1.

47298. No. 3.

47297. No. 2.

47299 and 47300. BERBERIS spp. Berberidaceæ. Barberry.

From Wisley, Ripley, Surrey, England. Plants presented by Mr. Fred J. Chittenden, director, the Royal Horticultural Society's Gardens. Received March 26, 1919.

47299. BERBERIS POLYANTHA Hemsl.

A deciduous shrub, 6 to 10 feet high, with simple or three-pronged thorns, obovate leaves, mostly rounded at the apex, and yellow flowers which are produced during June and July in drooping panicles carrying 20 to more than 50 blossoms. The fruit is red. This is a very fine species, remarkable for the large and abundant flower panicles. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 246.)

47300. BERBERIS RUBROSTILLA Hort.

"An elegant and beautiful seedling barberry of unrecorded parentage, but probably a hybrid between *Berberis wilsonae* and *B. concinna*. It has the growth of the latter, but has large pendent fruits of a rich coral-red color. A very pretty and useful addition to our fruiting shrubs." (*Gardeners' Magazine*, vol. 59, p. 449.)

47301. PYRUS USSURIENSIS Maxim. Malaceæ. Pear.

From Talent, Oreg. Cuttings presented by Prof. F. C. Reimer, director, Oregon Agricultural Experiment Substation. Received March 21, 1919.

These cuttings were taken from trees grown from S. P. I. No. 21880, collected by Mr. Meyer near Shinglungshan, Chihli, China.

"Seeds of a wild pear which grows here and there in big groves and sometimes assumes a large size, 60 to 80 feet tall, with trunks 2 to 3 feet in diameter. May be utilized as grafting stock in northern regions." (*F. N. Meyer*.)

47302 and 47303. PHOENIX DACTYLIFERA L. Phœnicaceæ.**Date palm.**

From Tripoli. Presented by Dr. E. O. Fenzi, director, Stabilimento Orticolo Libico, Tripoli. Received March 22, 1919. Quoted notes by Dr. Fenzi.

47302. "*Bayudi*. Ripening as early as August. Fruit large, cylindrical; pulp rather sweet but somewhat fibrous."

47303. "*Bronsi*. One of the latest varieties, hardly ripening before October. Fruits large to very large, of bright crimson color, turning to shining black at maturity; pulp of extra good quality."

47304 to 47308. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.**Oil palm.**

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant-Breeding Station. Received March 24, 1919. Quoted notes by Dr. Cramer.

"The oil palms I introduced here commenced to fruit when I had not yet my own garden in Sumatra at my disposition. I have planted in several Government rubber estates, where no other oil palms are in the neighborhood, plats of 5 to 10 palms, each plat descending from one seed bearer."

47304. "Variety *Bonga*. 423 K. W."

47305. "No. 1. Variety *Nsombo* C. 424 A. IV."

47306. "No. 1. Variety *Buinde* C. 426. M. III."

47307. "No. 1. Variety *Nsombo* B. (Gellet.) 102 K. W."

47308. "No. 3. Variety *Nsombo* B. (Gellet.) 102 K. W."

47309. ILEX PARAGUARIENSIS St. Hil. Aquifoliaceæ. Yerba maté.

From Asuncion, Paraguay. Presented by Mr. C. F. Mead, Porto Murtinho, Matto Grosso, Brazil. Received March 28, 1919.

"This seed has been in Asuncion for two years and it may be past its germinating stage. In this case, if it will not serve, I can probably get you a supply of the yerba of Brazil, which, as far as plant and seed are concerned, is of the same class, though the same can not be said of the prepared yerba." (*Mead.*)

For previous introduction, see S. P. I. No. 46891.

47310. SOLANUM SCALARE C. Wright. Solanaceæ.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham, Gizeh Branch, Ministry of Agriculture. Received March 29, 1919.

A shrubby solanum found along streams on the west coast of Africa from Sierra Leone to Pungo Andongo. The stem, the leaves, and the outside of the flowers are covered with stellate pubescence. The ovate-oblong leaves have undulate margins and the white or violet flowers, half an inch across, are borne in racemose clusters of about ten. The fruits are smooth, shining red, globose berries, about half an inch in diameter. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 2, p. 224.*)

47311 to 47314. DATURA spp. Solanaceæ.

From Ecuador. Collected by Dr. J. N. Rose, associate curator, U. S. National Herbarium, Washington, D. C. Numbered in March, 1919. Quoted notes by Dr. Rose.

47311. *DATURA* sp.

"(No. 23553. Seeds obtained in the American Legation at Quito.) A shrub, 10 feet high, with large orange-colored flowers. This plant is cultivated in parks at Quito and is very attractive."

47312. *DATURA* sp.

"(No. 22828. Collected at Cuenca. September, 1918.) A bush, 8 to 10 feet high, with rather small red flowers which are 5 or 6 inches long; the calyx and corolla lobes have long, acuminate tips."

47311 to 47314—Continued.**47313. DATURA sp.**

"(No. 22792. Collected at Azogues, Ecuador, altitude about 8,000 feet.) Bush, 6 to 8 feet high, covered with large, white, pendent flowers 12 inches long. It is called *Floripondio*."

47314. DATURA sp.

"(No. 22965. Collected south of Cuenca.) Flowers of a saffron-yellow; corolla lobes five, acuminate reflexed; calyx 3-lobed, green, acuminate; flowers smaller and the throat broader and the calyx lobes more attenuate than in the red-flowered species."

47315. DIALIUM DIVARICATUM Vahl. Cæsalpiniaceæ.

From Bolivar, Colombia. Fruits collected by Mr. H. M. Curran at Tierras de Loba. Numbered March, 1919.

Otu. Wood used for general construction requiring strength; bark is used for medicinal purposes. Native to northern States of Brazil. (Adapted from *Correa, Flora do Brazil*, p. 41.)

A tree with alternate, pinnately 3-foliolate leaves, the leaflets being ovate and about 2 inches long. The flowers are borne in erect terminal panicles and are followed by smooth, brown, pear-shaped fruits the size of a hazelnut. The seeds are surrounded by an edible pulp much resembling that of the tamarind, to which this tree is closely related. (Adapted from *Vahl, Enumeratio Plantarum*, vol. 1, p. 303.)

47316 and 47317. ZEA MAYS L. Poaceæ.**Corn.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received March 29, 1919.

"Two varieties. Corn maturing in 75 days from planting, obtained from Cotabato, which may be of value for breeders because of their earliness." (*Wester*.)

47316. "Gading."**47317. "Lamuck."****47318 and 47319.**

From San Jose, Costa Rica. Seed presented by Mr. F. Ruin. Received March 31, 1919.

47318. ANNONA CHERIMOLA Mill. Annonaceæ.**Cherimoya.**

A variety sent in without description. A subtropical tree, native to the Andes of Peru, which produces fruits of exquisite flavor.

For previous introduction and description of other forms, see S. P. I. Nos. 43485 and 45020.

47319. CYPHOMANDRA sp. Solanaceæ.**Tree-tomato.**

An undescribed species which has a "delicious fragrance, and is used for preserves."

47320. CHENOPodium AMBROSIoidES L. Chenopodiaceæ.**Wormseed.**

From Santiago, Chile. Presented by Sr. S. Izquierdo, Santa Ines Nursery. Received March 31, 1919.

A perennial herb, native to tropical South America, from which is obtained a very active anthelmintic frequently employed as a remedy for lumbricoid worms.

For previous introduction and further description, see S. P. I. Nos. 46296 and 46309.

47321. TRIFOLIUM AFRICANUM GLABELLUM Harv. Fabaceæ.

Clover.

From Cedara, Natal, Union of South Africa. Presented by Mr. John Fisher, acting principal, School of Agriculture. Received March 28, 1919.

An indigenous Natal clover found growing in vleis on the Cedara farm. Roots of this plant were dug up from the vlei and transplanted into the manured soils of the variety plats. They grew very vigorously, producing a thick sward and having to be cut back to prevent their smothering other clover in adjacent plats. This type dies down in the winter; it remains green, however, up to the end of June. It springs up again with the early rains and soon produces flower heads which are not unlike red-clover blossoms but larger. The plat lasted three years and then began to deteriorate. This type should receive special study and attention, as it is certainly better suited to the local conditions than any of the others which have been tried. (Adapted from *Sawyer, Cedara Memoirs on South African Agriculture, vol. 2, p. 163.*)

47322. CERONYLON ANDICOLA Humb. and Bonpl. Phœnicaceæ.

Wax palm.

From Bogota, Colombia. Presented by Sr. Jorge Ancizar. Received March 28, 1919.

"*Palma de cera* or *wax palm* of Colombia. Not to be confused with the carnauba wax palm of Brazil (*Copernicia cerifera*). The wax palm of Colombia is found in the high valleys of the Andes of that country at altitudes between 5,000 and 8,000 feet. The tree reaches a height of 125 feet and over, with a diameter up to 2 feet. The surface of the trunk is covered with a coating of a whitish wax, which gives it a curious marblelike appearance. As much as 25 pounds has been obtained from a single tree, and it is used by the natives for candle making. It has also been exported to Europe and, after being purified, is said to be suitable as a substitute for carnauba wax for many purposes. The leaves are feather shaped, dark green above, whitish below, and of a peculiar clothlike texture. The fruits are reddish, about the size of cherries, and appear in large bunches." (*C. B. Doyle.*)

47323. DIOSPYROS KAKI L. f. Diospyraceæ.

Kaki.

A tree growing at the Plant Introduction Field Station, Chico, Calif.; purchased in 1911 from the P. J. Berckmans Co., Augusta, Ga. Numbered for convenience in distribution.

"*Miyo tan*. This variety bears staminate blooms in the greatest profusion, but produces very few pistillate flowers, and for all practical purposes may be called a male variety. I believe it will prove an excellent tree to interplant in persimmon orchards, especially in the Southeastern States, where the investigations of Prof. H. H. Hume have shown a pollinator to be required for the setting of a good crop of fruit." (*Peter Bisset.*)

47324 to 47328.

From Los Banos, Laguna, Philippine Islands. Collected by D. W. H. Weston, College of Agriculture. Received March 31, 1919. Quoted notes by Dr. Weston.

47324. *COIX LACRYMA-JOBI* L. Poaceæ.

Job's-tears.

"Seed of the wild *Coix lacryma-jobi* which grows along the creek here. There is nothing unusual about it."

47325 and 47326. *COIX LACRYMA-JOBI* MA-YUEN (Rom.) Stapf. Poaceæ.
Ma-yuen.

"Seed of the *ma-yuen* which has been grown at the college here. The bulk seed was grown at the college for the first time from seed from Tangkulan, Bukidnon, Mindanao, where it was collected by Mr. P. J. Wester. Since the college-grown seed was over half a mile from any wild *Coix*, it is probably pure. It is a very interesting variety, tall, up to 7 feet, a heavy bearer, with green fruit turning a ruddy color, and finally to a grayish buff, or pale gray. Although the people here do not recognize it as different from the common hard-shelled Job's-tears and call it by the same names—tigbee and adlay—it has a soft exocarp, and is used for food in the islands of Mindanao and Palawan, and in the mountains back of Manila in Rizal Province."

47325. "Collected originally by Mr. P. J. Wester, November, 1918, Kalasungay, Bukidnon, Mindanao."

47326. "Grown at the College of Agriculture, Tangkulan, Bukidnon, Mindanao."

47327 and 47328. *ZEA MAYS* L. Poaceæ.

Corn.

47327. "'*Manobo sweet*.' These ears are from the original source of those we grew here, namely, the Cotabato region of Mindanao; and are consequently more pure than those grown here. It is a dwarf variety, maturing at about 3 to 4 feet, and is extremely early, requiring only about 72 days for complete maturity. The name '*Manobo sweet*' is misleading, since the Manobos are a wild tribe of that island and probably do not cultivate this maize particularly; and, furthermore, it is by no means a sweet type."

47328. "*Cotabato*." A corn of similar appearance to the "*Manobo*," but with white kernels rather than yellow. No notes other than the name under which it came are available concerning this variety.

47329. *POLAKOWSKIA TACACO* Pittier. Cucurbitaceæ. Tacaco.

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé. Received December 10, 1918. Numbered March, 1919.

"The tacaco has a hard skin when ripe, and keeps in perfect condition for weeks before it shrivels. The fruits preferred for planting are those which fall off the vine when dead ripe, but fruits shriveled from long keeping will also grow. If planted in the soil, they do not sprout; it is best to bury them in rotting leaves, but they will grow if placed on the ground with a layer of leaves over them." (Wercklé.)

For previous introduction, see S. P. I. No. 41141.

For an illustration of this fruit, with the flowers, see Plate IV.

**47330 to 47348. CASTANEA DENTATA (Marsh.) Borkh. Fagaceæ.
Chestnut.**

From New York. Scions collected by Dr. Walter Van Fleet. Received March 29, 1919.

"The material consists of grafting wood collected from trees that show evidence of resistance to infections of *Endothia parasitica* which has existed for nearly 20 years and has nearly destroyed all of the very abundant stands of chestnuts about the city of New York except three scattered groups. These were discovered during the past summer by Dr. A. H. Graves, New Haven, Conn., and the trees were numbered by him from 1 to 142. These groups are so disposed that it is conceivable that they may each be descended from a naturally resistant ancestor in each locality. Numbers 1 to 48 are situated in Innwood and Van Cortlandt Parks, at the north end of Manhattan Island, Nos. 49 to 76 near Hollis, Long Island, and Nos. 77 to 153 near Valley Stream, Long Island, all within a few miles of New York City. Material was collected only from the most promising trees in each locality." (*Van Fleet.*)

47330. No. 46. From Van Cortlandt Park, Manhattan Island.

From Hollis, Long Island:

47331. No. 57.

47335. No. 73.

47332. No. 58.

47336. No. 75.

47333. No. 60.

47337. No. 78.

47334. No. 68.

47338. No. 86.

47339. Precocious tree. From Hollis, Long Island.

From Valley Stream, Long Island:

47340. No. 90.

47345. No. 107.

47341. No. 93.

47346. No. 111.

47342. No. 96.

47347. No. 112.

47343. No. 103.

47348. No. 137.

47344. No. 106.

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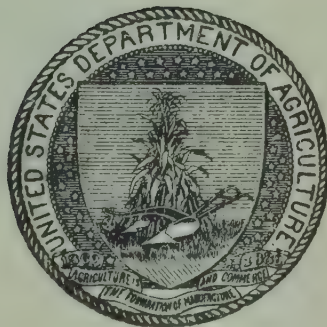
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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO JUNE 30, 1919.

(No. 59; Nos. 47349 to 47864.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1922.

THE STATE OF NEW YORK

IN SENATE,
January 1, 1891.

REPORT

OF THE

COMMISSIONERS OF THE LAND OFFICE

FOR THE YEAR 1890.

ALBANY:

WILLIAM H. SAWYER, PRINTER.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM APRIL 1 TO JUNE 30, 1919 (NO. 59; NOS. 47349 TO 47864).

INTRODUCTORY STATEMENT.

The peculiar character of these inventories can not be emphasized too often. They are not catalogues of plants now growing in arboreta or botanical gardens. They do not represent a reservoir of living plant material kept in stock for the experimenters of the country, for it would be quite impossible to maintain such a thing except at tremendous expense. The inventories are, however, attempts to record for future use the characteristics of a stream of plant immigrants which is pouring into America through the activities of this office. They show what the plants are botanically, where they come from, the name of the person who starts each one of them toward this country, and what the sender and, to some extent, what the printed literature has to say about each of these plants.

The agriculture of America in the next century will diverge widely from what it is to-day, just as to-day it is something vastly different from its condition when the Indians hunted over the country. Some of the beginnings of the changes that are coming will find their first record in these plant inventories. Even now it will be found that the date oases of California and Arizona, the durum-wheat areas of the Great Plains region, the feterita-sorghum areas and the Sudan grass fields of the West, the dasheen patches of the South, the Zante currant vineyards of California, the timber-bamboo groves of Louisiana, the rice fields of California and Texas, if their history is traced, had their beginnings in part or wholly in these inventories, for the first notices of the arrival on American shores of the plants which have made them possible were printed here. Many interesting new plants make their first appearance with us in this fifty-ninth inventory.

The fact that many hardy palms thrive and bear well on the high pinelands of Florida and in southern California makes the introduction of a Brazilian species of *Butia* (No. 47350) with fruits as large as plums and having a pineapple flavor a matter worthy of unusual attention by Florida and California amateurs.

Rosa gentiliana (No. 47359) was presented by Lady Harriet Thiselton-Dyer, from her Gloucester home in England, in April, 1919. Dr. Van Fleet, who has a bush of this species at Bell, Md., predicts that it will have a great future in the Southern States, and he has urged its wide distribution there.

The Guatemala grass (*Tripsacum laxum*, No. 47396), first introduced by Mr. G. N. Collins, has made a satisfactory growth in southern Florida and seems promising as a forage grass there.

A variety of bush Lima bean (No. 47447), selected since 1876 by Mr. Harkness at Iroquois, Ontario, and now adapted to cultivation in regions with a season too short for the ordinary strains of this vegetable, is presented to American growers.

The success of certain African species of trees in southern Florida makes worthy of special mention the arrival of a collection (Nos. 47496 to 47503) which includes: A new species of *Erythrina* (*E. excelsa*, No. 47498), with gorgeous scarlet flowers; a fragrant-flowered tree related to the *Annona* (*Monodora myristica*, No. 47500), with flowers 6 inches across; an ornamental leguminous tree (*Pahudia africana*, No. 47501) with dense racemes of fragrant blossoms; and a new species of *Spathodea* (*S. nilotica*, No. 47502), related to *S. campanulata*, which is already a common tree around Miami.

Mr. Gossweiler has sent from Loanda, Angola, a distinctly new fruit tree (*Trichoscypha* sp., No. 47519) which bears bunches of edible peachlike fruits. The tree is native to Portuguese West Africa and may prove an acquisition to Porto Rican and Hawaiian horticulture.

The acom of Brazil (*Dioscorea latifolia*, No. 47564), a yam which bears aerial tubers suggesting by their shape a turkey's liver, is remarkable in that these tubers are excellent eating when cooked. The growing interest in this group of starchy food producers may make this new introduction which Sr. Argollo Ferrão has sent of unusual importance.

The discovery of a bush variety of *Dolichos lablab* (No. 47568) by Mr. Harland, of St. Vincent, not only may make it possible to use this excellent cover crop in the citrus orchards of Florida, since it will not climb the trees, but also may lead to a wider use of this species as a vegetable. Its beans make excellent soups and are useful in many ways.

The puka tree of New Zealand (*Meryta sinclairii*, No. 47570), which for some time was supposed to be nearly extinct in its native habitats but now is grown as an ornamental, has so interesting a history that amateurs who can grow it will be interested to read Mr. Poynton's account of its introduction into cultivation.

To an amateur who will take the trouble to breed them the *Actinidias* offer a promising field, and he will want to add *A. strigosa* (No. 47633) to his collection for breeding purposes. When one considers the vigor and beauty of these climbers and their freedom from disease, they seem worth improvement as decorative vines alone, but when the delicate character of their fruit is taken into consideration the problem of their breeding and selection becomes one of real importance.

Arundinella hispida (No. 47641) is a grass from the hilly parts of India, which is distributed pretty generally through the Tropics and which in Sao Paulo, Brazil, is considered a good forage plant for dry lands.

The *Buddleias* have proved a great addition to our garden plants and a tree species from India (*B. asiatica*, No. 47650), with sweet-scented white flowers which bloom continuously for three months, may add another perfume to the dooryards of Florida and California.

Eriobotrya petiolata (No. 47679), a relative of the loquat of Japan which occurs in Sikkim and the eastern Himalayas, may be interesting to try as a stock for the more familiar Japanese species.

Grewia multiflora (No. 47689), a tree related to the linden, the wood of which is suitable for ax handles, oars, etc., and which grows at 4,000 feet altitude in India, may be worthy of trial in the South.

A vigorous vine (*Holboellia latifolia*, No. 47693), which bears racemes of delightfully fragrant green and violet flowers and fruits 5 inches long resembling a passion fruit in flavor, is something which everyone who lives where it can be made to grow will be interested in testing.

Mr. Cave, the curator of the Lloyd Botanic Gardens in Darjiling, has sent in a remarkable collection of 230 species of Himalayan ornamental and economic plants (Nos. 47629 to 47858), among which are many that will doubtless find a permanent home in America. The Puget Sound region, if not too cool in winter, should be admirably adapted to their culture. Among the trees of interest are found Himalayan maples (*Acer* spp., Nos. 47629 to 47632); a new birch (*Betula utilis*, No. 47647); an Indian tamarisk (*Tamarix dioica*, No. 47810) which is often planted along the seacoast and which may prove of value for our own Florida coast; and two species of the genus *Terminalia* (Nos. 47855 and 47856), which may be worth trying as shade trees in Florida since *T. arjuna* has proved so successful there. There are a number of fruits of interest, including a wild olive from Sikkim (*Olea gamblei*, No. 47742), which bears fruits an inch in length; a yellow-fruited raspberry (*Rubus ellipticus*, No. 47781), said to be one of the best wild fruits of India; *Solanum verbascifolium* (No. 47800), a shrub cultivated in southern India for

its small fruits, which are eaten in curries; and a species of *Artocarpus* (*A. lakoocha*, No. 47833) related to the jack-fruit and bread-fruit trees but with small yellow acid fruits. *Manisuris striata* (No. 47847) and *Panicum patens* (No. 47848) are new forage grasses of possible value for the South. The collection contains some remarkable ornamentals: Five strains of the gorgeous *Magnolia campbellii* (Nos. 47714 to 47718), the most wonderful of all magnolias, bearing blossoms 10 inches across, ranging from white through dark red to purple; a new ornamental tree, *Luculia gratissima* (No. 47710) with magnificent round masses of pink flowers; *Microglossa albescent* (No. 47733), a tree of the composite family with corymbs of lilac flowers 8 inches in diameter; seven species of Himalayan rhododendrons (Nos. 47771 to 47777); *Pueraria phaseoloides* (No. 47850), a relative of the kudzu vine, bearing reddish instead of purple flowers (it may not have the luxuriant weedy habit of the kudzu); and one of the most beautiful of Himalayan creepers, the Porana or snow-creeper (*Porana racemosa*, No. 47761), which has already proved its adaptability to conditions in southern Florida, where it blooms in the winter time and makes a gorgeous show. There are also included a remarkable barberry (*Berberis napaulensis*, No. 47646); a Himalayan bittersweet (*Celastrus paniculatus*, No. 47657); three species of Indian Ilex (Nos. 47697 to 47699); two species of Himalayan cherry (Nos. 47766 and 47767), possibly suitable for stocks; *Toddalia asiatica* (No. 47813), one of the most valuable of Indian drug plants; and the emblic myrobalan (*Phyllanthus emblica*, No. 47751), a fruit which is used for tanning purposes and also as a pickle.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels, while the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 4, 1921.

INVENTORY.¹

47349 to 47357.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received April 1, 1919.

47349. *ABROMA AUGUSTA* L. f. Sterculiaceæ.

A large spreading shrub, native to tropical Asia, with leaves and branches softly hairy, the leaves cordate and angled, and with purple flowers; the capsule is membranous, 5-angled and 5-winged, and the seeds are numerous. It flowers most profusely during the rains, and the seeds ripen in the cold season. The bark of the twigs yields a fiber much valued for its great beauty, softness, cheapness, and durability. It might be used with advantage as a substitute for silk. The plant yields three crops a year. The bark of the root is used medicinally. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 8.)

47350. *BUTIA CAPITATA PULPOSA* (Barb.-Rodr.) Becc. Phœnicaceæ.

(*Cocos pulposa* Barb.-Rodr.)

Palm.

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriospatha*. The trunk is 6 to 12 feet by 1½ to 2 feet in diameter, with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The fruit is yellow, about 1 inch long and 1¼ inches in diameter, and the pulp is of a texture and taste somewhat like the pineapple." (*C. B. Doyle*.)

For previous introduction, see S. P. I. No. 43238.

47351. *CAESALPINIA SEPIARIA* Roxb. Cæsalpiniaceæ.

A large, climbing, prickly bush on the Himalayas, and extending to Ceylon and Java; it ascends to 4,000 feet in altitude. Lac is gathered on the tree in Baroda. The bark is much used for tanning and the young pods contain an essential oil; in Chumba the bruised leaves are applied to burns. It makes an impenetrable hedge. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 13.)

¹ All introductions consist of seeds unless otherwise noted. It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

47349 to 47357—Continued.**47352. CASSIA BONARIENSIS Colla. Cæsalpiniaceæ.**

A shrub from Buenos Aires, Argentina, growing about 6 feet high, with lance-shaped leaflets and ornamental clusters of yellow flowers.

For previous introduction, see S. P. I. No. 43773.

47353. CASSIA HIRSUTA L. Cæsalpiniaceæ.

An erect annual herb covered with long hairs. The compound leaves are made up of three to five pairs of ovate leaflets 2 to 3 inches long, and the yellow flowers are borne in axillary racemes. Native to Brazil. (Adapted from *Martius, Flora Brasiliensis, vol. 15, pt. 2, p. 114.*)

47354. DAHLIA MAXIMILIANA Hort. Asteraceæ.**Dahlia.**

A tall dahlia, about 7 feet high, with smooth lenticular stems, bipinnate leaves having relatively slender petioles, and lilac flowers. The plant presents a stately appearance and continues in bloom for a considerable time. Native to Mexico. (Adapted from *Gardeners' Chronicle, vol. 11, p. 216.*)

47355. ECHIMUM NERVOSUM Ait. Boraginaceæ.

A shrubby perennial with lanceolate leaves and large, ovate racemes of blue flowers. It is native to the Madeira Islands, where it flowers from June to August. (Adapted from *Aiton, Hortus Kewensis, 2d ed., vol. 1, p. 300.*)

47356. ECHIMUM WILDPRETII Pearson. Boraginaceæ.

A tall, softly hairy biennial, with a simple, erect, leafy stem, 2 to 3 feet high, terminated by a dense-flowered thyrsus of innumerable short-peduncled cymes which are very much shorter than the linear, upcurved floral leaves. The stem leaves are 6 to 8 inches long, softly hairy on both surfaces; the lower floral leaves are 3 to 4 inches long and linear. The pale-red flowers are funnel or bell shaped. Native to the Canary Islands. (Adapted from *Curtis's Botanical Magazine, pl. 7847.*)

47357. HIBISCUS MUTABILIS L. Malvaceæ.

A tall East Indian shrub, with large, broad cordate leaves and bearing large red flowers which change to white. It blooms in summer and late autumn, and is considerably planted in gardens and hedges. (Adapted from *Britton, Flora of Bermuda, p. 238.*)

47358. GARCINIA TINCTORIA (DC.) W. F. Wight. Clusiaceæ.
(*G. xanthochymus* Hook. f.)

From Cienfuegos, Cuba. Presented by Mr. Robert M. Grey, Harvard Experiment Station. Received April 1, 1919.

"The tree, which is fairly rapid in growth, has large, opposite, elliptic or oblong, coriaceous leaves 6 to 10 inches long. The orange-yellow fruits, borne singly or in clusters of 3 to 5 in the axils of the leaves on mature wood, are round or tapering to an acute apex and are often over 2 inches in diameter. They are made up of 3 to 5 segments, each usually containing a large, oblong seed. The flavor of the ripe fruit is subacid and not excellent. The green fruit, when cut or injured, exudes a quantity of yellow gum. Received several years ago under the name of *Garcinia mangostana.*" (Grey.)

47359. ROSA GENTILIANA Lev. and Van. Rosaceæ. **Rose.**

From Witcombe, Gloucester, England. Presented by Lady Harriet Thistleton-Dyer. Received April 2, 1919.

A rose which is abundant in the mountainous regions of western Hupeh and eastern Szechwan, where it forms tangled masses 6 meters or more in height. The numerous large white flowers are very fragrant, and the anthers are golden yellow. The species is easily distinguished by its glabrous, pale-gray shoots and the 3 to 5 foliolate leaves which are shining green above and very pallid beneath. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 312.)

Cuttings from the same plant were received as *Rosa cerasocarpa* Rolfe (now referred to *R. gentiliana*) and recorded under S. P. I. No. 46789.

47360. GLYCINE PRICEANA (Robinson) Britton. Fabaceæ. **Price's groundnut.**

(*Apios priceana* Robinson.)

From Hartsville, S. C. Collected by Mr. J. B. Norton, Agricultural Explorer for the Department of Agriculture, in September, 1918. Received April 2, 1919.

"Seed from plants growing on the grounds of Mr. David R. Coker, Hartsville, S. C. I collected the original tuberous roots in October, 1917, at Bowling Green, Ky. Bowling Green is the type locality and the only known region where this wonderful bean grows wild. This plant is useful both as an ornamental and as a food plant." (Norton.)

47361. XANTHOSOMA SAGITTAEFOLIUM (L.) Schott. Araceæ.

Yautia.

From Port of Spain, Trinidad, British West Indies. Corms presented by Mr. Claude Connell through Mr. F. W. Urich, entomologist, Board of Agriculture. Received April 2, 1919.

"A yautia, with reddish buds, received under the name of 'nut eddo.' The flesh of the corms is yellowish when cooked, and of fair flavor." (R. A. Young.)

47362 and 47363.

From Peking, China. Presented by Mr. Han, assistant director, Chinese Forestry Bureau, through Hon. Paul S. Reinsch, American Minister at Peking. Received April 3, 1919. Quoted notes by Mr. Han.

47362. PISTACIA CHINENSIS Bunge. Anacardiaceæ. **Chinese pistache.**

"The pistache tree is a fairly rapid grower. Its wood is good, durable, and much valued in making household furniture and agricultural implements. Its shoots are edible. Oil is extracted from its seeds. It is found in the central parts of China, especially along the northern side of the Yangtze Valley. It is of great economic value."

For previous introduction, see S. P. I. No. 46136.

47363. STILLINGIA SEBIFERA (L.) Michx. Euphorbiaceæ. **Tallow tree.**
(*Sapium sebiferum* Roxb.)

"The tallow tree is well known for the oil it produces. Two kinds of oil are produced from the tallow tree: the waxy oil from the outside of the seed, much used in making tallow, and the liquid oil extracted from the seeds. It is found in the central parts of China, especially along the northern side of the Yangtze Valley. It is of great economic value."

For previous introduction, see S. P. I. No. 23218.

47364. Gossypium sp. Malvaceæ. Kidney cotton.

From Asahan, Sumatra. Collected at Kampong Poeloe, Mandi, by Prof. H. H. Bartlett, University of Michigan, Ann Arbor, Mich. Received April 3, 1919.

"*Kapas Palembang*. Seed of a native-grown cotton from Kampong Poeloe, Mandi, Asahan, Sumatra. It grows to be a small tree." (Bartlett.)

**47365. LITHOCARPUS CORNEA (Lour.) Rehder. Fagaceæ.
(*Quercus cornea* Lour.)**

From Hongkong, China. Purchased from Mr. W. J. Tutcher, superintendent, Botanical and Forestry Department. Received April 3, 1919.

"An oaklike tree with oblong, sharp-pointed evergreen leaves 2 to 4 inches long, which are smooth and green on the under side; interesting particularly as bearing acorns as hard-shelled as the nuts of the American hickory, which contain a kernel almost as sweet as the sweetest Spanish chestnut. Said to be a very interesting ornamental as grown on the island of Hongkong." (David Fairchild.)

For previous introduction, see S. P. I. No. 10633.

47366 to 46368. ACACIA spp. Mimosaceæ. Acacia.

From Tangier, Morocco. Presented by M. Jules Goffart. Received April 3, 1919.

47366. ACACIA BUXIFOLIA A. Cunn.

An Australian shrub with slender twiggy branches bearing nearly erect, lanceolate, glabrous phyllodia and racemes, longer than the leaves, of four to six globose heads of deep-yellow flowers. (Adapted from *Hooker, Icones Plantarum, vol. 2, pl. 164.*)

47367. ACACIA HOLOSERICEA A. Cunn.

This shrub or small tree from Australia is interesting because of the white, silky pubescence which covers the branches and leaves. The branchlets are 3-angled; the obliquely acute phyllodia are 4 to 6 inches long; and the flowers are in spikes 2 inches long. (Adapted from *Bailey, Standard Cyclopædia of Horticulture, vol. 1, p. 187.*)

47368. ACACIA NOTABILIS F. Muell.

A tall handsome shrub found on the slopes of the mountains in New South Wales and South Australia. The sword-shaped, almost linear, phyllodia are 4 to 6 inches long, and the dense globular heads, of about 50 flowers each, are borne in short racemes. (Adapted from *Bentham, Flora Australiensis, vol. 2, p. 365.*)

47369. PHORMIUM TENAX Forst. Liliaceæ. New Zealand flax.

From Auckland, New Zealand. Purchased through Mr. J. W. Poynton. Received April 3, 1919.

"Good *Phormium tenax* seed, purchased from a local seedsman. The variety has no name; in fact, the plant does not vary much, it is known as 'good' or 'poor' according to its size and fiber content." (Poynton.)

47370. PHYLLOSTACHYS PUBESCENS Houzeau. Poaceæ. Bamboo.

From Anderson, S. C. Rhizomes purchased from Mr. Rufus Fant. Received April 3, 1919.

"Mr. Fant's account of this clump [from which these rhizomes were taken] is that about twenty years ago he saw the 'Giant Japanese Bamboo' advertised in a florists' paper by H. H. Berger, of San Francisco. He sent the money and bought a plant, or rather a piece of rhizome; it died. He sent again and got a pot-grown plant; he was afraid this was not hardy, so kept it potted for about five years, until it outgrew the pot, and then planted it out of doors where it now stands. In 1912 he formed the idea of starting a grove along a little stream which runs through Silver Brook Cemetery, not far from his house. So he took up a clump of bamboo in February and planted it there—we counted, together, 266 good-sized canes about 30 feet tall. One is $12\frac{1}{2}$ inches in circumference 1 inch above the ground. The range is from 5 to $12\frac{1}{2}$ inches in circumference.

"On each side of his house Mr. Fant has plantings of this true Moso bamboo, *Phyllostachys pubescens*, or *P. mitis* as it was formerly called. On the right the clump had been cut back and was low and bushy; on the left the culms were tall, almost to the roof of the 2-story house. Mr. Fant explained that the clump on the right had been killed or at least seriously injured by a freeze of $+2^{\circ}$ F., which occurred February 15, 1918. He had cut the bamboo to the ground as soon as the new growth began, April 15, so that the dead culms were annoying for only two months. By May 10 the bushy growth had attained its present height. This is an important fact, for it indicates how quick will be the recovery from frost injury and of how little consequence is the fact that once in a while the grove may be killed down. The house protected the clump on the sheltered side." (*David Fairchild, Report of Southern Trip, 1918.*)

47371 to 47374. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Dominica, British West Indies. Presented by Mr. Joseph Jones, curator, Botanic Gardens. Received April 7, 1919. Quoted notes by Mr. Jones.

47371. "The *Calabash* cacao. It is the hardiest of all varieties and yields the lowest grade of cacao."

47372. "A *Forastero* variety, with red-colored pods; very prolific."

47373. "A *Criollo* variety, with yellow-colored pods; yields seeds of good quality."

47374. "A *Yellow Forastero* variety, with yellow-colored pods; yields seeds of good quality."

47375 to 47377. LITCHI CHINENSIS Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

From Honolulu, Hawaii. Cuttings presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received April 8, 1919. Quoted notes by Mr. Higgins.

47375. "No. 1083. This is the lot received from you through Seattle in 1907."

47376. "No. 1265. *Kwai mi*."

The *Kwai mi* (or *Kuei wei*) is a very popular commercial variety. The fruit has a very rough but pretty red skin, which is often tinged with green. Fruits of the *Kwai mi* the skin of which is altogether red are said to be very inferior to those with the green markings. This green

47375 to 47377—Continued.

color of the skin usually appears on the shoulders. There is usually a line or constriction in the skin, running around the fruit, which is quite characteristic. The roughened character of the skin, which is quite prickly, is another prominent feature of this variety. The seed of the *Kwai mi* is very small and dry. The flavor of the flesh is very sweet and fragrant, from which the variety doubtless gets its name of "cinnamon flavor." (Adapted from Groff, *The Lychee and Lungan*, p. 93.)

47377. "No. 1266. *Hak ip*."

The *Hak ip* (or *Hei yeh*) is one of the most widely known and popular varieties in Kwangtung. It is widely planted, but certain places are known to produce fruits of the better types. A characteristic feature of the *Hak ip* is the color of the leaves, which are very dark and from which the variety gets the name "Black leaf." The leaves are long and wide, pointed, and slightly curled. The tree is densely covered with them. The petioles are quite long. The fruit ripens in June and July, the season in which the best lychees appear. It is a medium-sized fruit with thin, soft skin. The shoulders are wide. The color is not so red as that of many varieties and is tinged with green. The seed is usually fully developed, of good size, and readily germinates. The inside of the skin, and sometimes the flesh, is slightly pink. The flesh is sweet and crisp. This variety is said to be one of the best of the "water lychees," but it is also recommended for upland conditions if sufficient water for irrigation is assured. It is a beautiful tree and widely used as an ornamental. (Adapted from Groff, *The Lychee and Lungan*, p. 95.)

47378. *CUCURBITA PEPO* L. Cucurbitaceæ.

Squash.

From Shanghai, China. Presented by Mr. F. J. White, president, The Shanghai Baptist College and Theological Seminary. Received April 8, 1919.

"This squash is a greenish bronze, round, and ribbed; the flesh is remarkably thick and of very good quality. There is hardly any cavity at all inside the squash." (*White*.)

47379 to 47395. *TRITICUM AESTIVUM* L. Poaceæ.
(*T. vulgare* Vill.)

Wheat.

From Queensland, Australia. Presented by Mr. H. C. Quodling, Director of Agriculture, Brisbane. Received April 9, 1919.

"Most of these varieties of wheat were grown at the Roma State Farm and are known so far only by letters and numbers corresponding with the records at the particular institution." (*Quodling*.)

47379. <i>Ambly</i> .	47388. <i>B × I P 1</i> .
47380. <i>Bunge</i> .	47389. <i>B × I P 2</i> .
47381. <i>Coronation</i> .	47390. <i>B × Man 5</i> .
47382. <i>Haidee</i> .	47391. <i>B × Man 7</i> .
47383. <i>Soutter's Early</i> .	47392. <i>Bp × Bl 45</i> .
47384. <i>Warren</i> .	47393. <i>B × W P 50</i> .
47385. <i>Beloturka × Florence 3</i> .	47394. <i>C. C. C</i> .
47386. <i>B × F 33</i> .	47395. <i>343 × 18</i> .
47387. <i>B × F 96A</i> .	

47396. TRIPSACUM LAXUM Nash. Poaceæ. Guatemala grass.

From Alta Vera Paz, Guatemala. Presented by Kensett Champney & Co., Finca Sepacuite. Received May 2, 1919.

"Introduced originally from Guatemala by Mr. G. N. Collins who states that it grows wild rather extensively in the vicinity of Alta Vera Paz, Guatemala, and is known to the natives as *pal*. No use is made of it by the natives.

"Guatemala grass has grown very luxuriantly at Miami, Fla., for the past three years. The canes become an inch or more in diameter and grow to a height of about 12 feet. The nodes are numerous and the texture of the stems rather soft and juicy with a somewhat mucilaginous sweetish sap. The leaves are from 2 to 3 inches broad and are rather strongly armed on the margins with minute sharp teeth. These teeth are the only objectionable feature to the grass, as if carelessly handled the leaves will cut the hands. The grass looks exceedingly promising for either silage or for green feed. At Miami canes are often left over winter and have fallen down and become procumbent, and these canes have produced flowers in abundance but no good seed. Therefore all distributions of the grass made thus far have of necessity been of pieces of the cane, from which the grass grows very readily." (*C. V. Piper.*)

An illustration of this grass as it grows at Miami, Fla., is shown in Plate I.

47397. GOSSYPIUM sp. Malvaceæ. Cotton.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received April 12, 1919.

"I have received from a correspondent at Djibouti a cotton which he has selected and which he characterizes as 'Coton Gabod,' obtained at Djibouti, at Din Davona. It is satisfied with an annual rainfall of 300 mm. in a very hot country, in siliceous-argillaceous soil; not irrigated for two years." (*Trabut.*)

47398 and 47399. DIOSCOREA ALATA L. Dioscoreaceæ. Yam.

From St. Lucia, British West Indies. Tubers presented by Mr. Samuel Rosen, New York. Received April 12, 1919. Quoted notes by Mr. R. A. Young.

47398. "A white-fleshed yam of medium size. It is quite moist when cooked, but makes an excellent dish when mashed and beaten thoroughly."

47399. "A medium-sized yam of good quality, with yellowish flesh."

47400. SCHRANKIA sp. Mimosaceæ.

From Bahia, Brazil. Presented by Dr. V. A. Argollo Ferrão. Received April 12, 1919.

"A kind of sensitive plant that forms a small bush and appears to make a forage crop as well as a green manure. Mules and cattle are fond of it. This seed was collected from plants growing in an orchard on argillaceous soil." (*Argollo Ferrão.*)

47401 and 47402.

From Cairo, Egypt. Presented by Mr. F. G. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received April 15, 1919.

47401. CESTRUM PARQUI L'Her. Solanaceæ.

A semihardy, nearly glabrous shrub, native to Chile. The leaves are lanceolate to oblong and the long tubular flowers are sessile in open panicles, greenish yellow, and very fragrant at night. It is much

47401 and 47402—Continued.

grown in warm countries where it blooms continuously. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 727.*)

47402. HYPHAENE THEBAICA (L.) Mart. Phœnicaceæ. Doum palm.

An Egyptian palm. 3 to 9 meters in height, with a trunk about 30 centimeters in diameter.

For previous introduction, see S. P. I. No. 45004.

47403 to 47408. THEOBROMA CACAO L. Sterculiaceæ. Cacao.

From Port of Spain, Trinidad, British West Indies. Seeds and pods presented by Mr. R. S. Williams, Acting Director of the Department of Agriculture. Received April 15, 16, and 17, 1919.

"Pods of each of six varieties of our best-bearing types of *Forastero cacao*." (Williams.)

47403. 1a.

47406. 4a.

47404. 2a.

47407. 5a.

47405. 3a.

47408. 6a.

47409 to 47415. RIBES spp. Grossulariaceæ. Currant.

From Middle Green, Langley, Slough, England. Plants purchased from Mr. J. C. Allgrove. Received April 17 and 19, 1919.

Introduced for breeding experiments.

47409 and 47410. RIBES NIGRUM L.

Black currant.

47409. *Carter's Champion*.

47410. *Ogden's Black*.

47411 to 47415. RIBES VULGARE Lam.

Garden currant.

47411. *American Wonder*.

47414. *La Versailles*, red.

47412. *Cherry*.

47415. *Warner's grape*, red.

47413. *Fox's Large Grape*, red.

47416 to 47422.

From Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Zamboanga. Received April 17, 1919. Quoted notes by Mr. Wester.

47416. GYNURA SARMENTOSA (Blume) DC. Asteraceæ.

"A climber with panicles of orange-colored flowers which have a pronounced odor similar to that of the field daisy. It is very floriferous. If it succeeds it would make a very striking and attractive climber. Collected at an altitude of 1,500 feet in Mindanao."

47417 to 47420. RUBUS spp. Rosaceæ.

"Four species of *Rubus* sent to me from the Mountain Province [Luzon] without any vernacular names or description, and I am therefore unable to give any information as to what species they are."

47417. *RUBUS* sp.

A large-seeded form.

47418. *RUBUS* sp.

A form with medium-sized seeds.

47419. *RUBUS* sp.

Small seeded; apparently small fruit.

47420. *RUBUS* sp.

Small seeded; apparently medium-sized fruit.



A CLUMP OF GUATEMALA GRASS AT MIAMI, FLA. (TRIPSACUM LAXUM NASH., S. P. I. No. 47396.)

Guatemala grass, a new forage crop for the South, introduced in 1919, has been found valuable in southern Florida, where it is now being planted extensively by dairymen and others. On ordinary soil it reaches 6 to 8 feet in height; on muck lands it grows even larger and produces 20 to 60 culms to a clump. The stems are juicy practically to the base, and cattle eat them with great avidity. Propagation is easily effected by means of the joints, which should be placed in moist moss and roots allowed to develop before they are planted in the field. The species, which will not tolerate much frost, gives promise of an important future in Florida as a soiling and silage crop. (Photographed by Peter Bisset, Miami, Fla., December 10, 1917; P23778FS.)



A DISH OF THE ACOM. (*DIOSCOREA LATIFOLIA BENTH.*, S. P. I. No. 47564.)

The acom, one of the tropical yams, is almost unique among the edible species of this genus in that the tubers are aerial, being borne in the vine axils of the leaves instead of underground. The flesh of the tubers is yellowish, very dry, and firm, with a distinctive flavor. While perhaps not of such high table quality as some of the white-fleshed yams, the exceptional keeping qualities of the acom may give it a place of considerable value in our markets when the right conditions for growing it in this country are found. It is much esteemed where grown in Brazil. (Photographed, slightly reduced, by E. L. Crandall, from tubers grown at the Plant-Introduction Garden, Brooksville, Fla., April 24, 1920; P25411FS.)

47416 to 47422—Continued.

47421 and 47422. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

"Two varieties of sitao, *Vigna sinensis*, a climbing bean with long, slender, flexible pods that may be eaten as string beans and are of good quality when picked young and tender."

47421. *Tentdog.*

47422. *Inombog.*

47423. *DIMOCARPUS LONGAN* Lour. Sapindaceæ. **Longan.**
(*Nephelium longana* Cambess.)

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received April 22, 1919.

"The fruits of this longan are small but excellent. Plants of this variety grown from seed bear well and would certainly grow in Florida." (Regnard.)

47424 and 47425.

From Guayaquil, Ecuador. Presented by Dr. Frederic W. Goding, American consul general. Received April 21, 1919. Quoted notes by Dr. Goding.

47424. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. **Sapote.**
(*Lucuma mammosa* Gaertn. f.)

"A fruit about the size of a teacup, resembling a potato in general appearance and having a rough, dark greenish brown skin mottled with sordid yellow. The edible portion is red, soft, and sweet, with a peculiar but pleasant flavor; in the center of the edible portion is a shuttle-shaped seed about 2 inches long, of a chestnut-brown color, and always split along one side. Within the hard, thin, shining shell is a white kernel."

47425. *MAMMEA AMERICANA* L. Clusiaceæ. **Mamey.**

"From the injured skin of the *mamey de Cartagena* exudes a resinous, gummy juice which is much used for killing chigoes and lice when applied locally. Animals suffering with mange and sheep ticks are cured by washing in a decoction made by boiling the seeds in water; if, however, ulcers are present it should not be employed—as a case is known of a dog suffering from mange and ulcers, but otherwise healthy, that died in two days after having been bathed twice in the solution. Used in the form of a cerate it kills many varieties of insects. An infusion of the fresh or dry leaves (one handful to a pint of water in cupful doses) given during the intervals of fever, has repeatedly cured intermittents and remittents which did not yield to the quinine salts. The treatment should be continued for several days. A yellow and violet-scented liquor is made from the fruit and flowers and is a very delicious beverage. The fruit eaten green or ripe, or in preserves, possesses beneficial stomachic qualities."

47426 to 47428. *COIX LACRYMA-JOBI* L. Poaceæ. **Job's-tears.**

From Buitenzorg, Java. Presented by Dr. W. Docters van Leeuwen, director, Botanic Garden. Received April 22, 1919.

47426. Fruit narrowly ovate, twice as long as broad, pearl gray.

47427. Fruit nearly spherical; the ordinary variety.

47428. Fruit narrowly ovate, $2\frac{1}{2}$ times as long as broad, grayish brown.

47429 and 47430. HIBISCUS SABDARIFFA L. Malvaceæ. Roselle.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received April 23, 1919.

"Var. *altissima*. Because of the fibrous and spiny character of the small calyces of the two forms belonging to the *altissima*, they have no culinary value. However, their habit of growth is favorable to the production of a long fiber; and, according to Mr. M. M. Saleeby, chief of the fiber division of this Bureau, the two forms of this variety are far superior to jute and to all other varieties of roselle (including four from India) in habit, growth, and yield. As yet the problem of utilization of the fiber of the *altissima* has not been carefully studied, but it is apparently suitable for all uses in which jute fiber is now employed." (*Wester, Philippine Agricultural Review*, vol. 7, p. 268.)

47429. *Altissima* roselle, red. **47430.** *Altissima* roselle, white.

47431. DIMOCARPUS LONGAN Lour. Sapindaceæ. Longan.
(*Nephelium longana* Cambess.)

From Port Louis, Mauritius. Presented by Mr. Gabriel Regnard. Received April 24, 1919.

"The longan has fruited successfully both in Florida and California. The quality of the fruit, however, is inferior; and the principal interest which this species now has for us is in connection with lychee culture, as it is possible that it may be of value as a stock for the lychee in certain regions." (*Wilson, Popenoe.*)

47432 and 47433. IPOMOEA BATATAS (L.) Poir. Convolvulaceæ. Sweet potato.

From Mayaguez, Porto Rico. Tubers presented by Mr. T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received April 24, 1919.

"Tubers of two varieties of the mamey type of sweet potato from the eastern part of the island. The donor distinguishes these as *Mameyona*, or large mamey, and *mameyita*, or small mamey. He prefers the *mameyita*, if it is eaten immediately after digging, but says that the *mameyona*, if kept for a week, has the better flavor. However that may be, both belong to the best type of Porto Rican [sweet] potato." (*McClelland.*)

47432. *Mameyona*. **47433.** *Mameyita*.

47434. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, chief, Industrial Department, Leopoldina Railway Co., Ltd. Received April 29, 1919.

"Seed of the *pinha* (fruta de conde), of a very special variety. This is not the very large kind, but it is the best flavored I have ever found in the country. This fruit will grow in southern Florida." (*Day.*)

47435. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ. Yard-Long bean.

From Gatun, Canal Zone. Presented by Mr. George E. Hardwick. Received April 29, 1919.

"A bean the pods of which grow to a length of 15 to 20 inches." (*Hardwick.*)

47436 and 47437. SOJA MAX (L.) Piper. Fabaceæ. Soy bean.
(Glycine hispida Maxim.)

From Wakamatsu, Japan. Presented by Rev. C. Noss. Received April 29, 1919.

47436. Received as *Ogon daizu*. Seeds large, nearly spherical, golden yellow. The seeds, however, agree with those of S. P. I. No. 40371, *Dekisugi*.

47437. Received as *Hato koroshi daizu*. The seeds agree, however, with those of S. P. I. No. 40119, *Usuao*.

47438 and 47439.

From Bahia, Brazil. Presented by Sr. V. A. Argollo Ferrão. Received May 2, 1919. Quoted notes by Sr. Argollo Ferrão.

47438. CROTALARIA sp. Fabaceæ.

"A species from the coast, which grows in sandy land."

47439. CROTALARIA sp. Fabaceæ.

"A species from the mountains of Villa Nova, which grows in red soil formed by decomposed granitoid rocks."

47440. ATTALEA GOMPHOCOCCA Mart. Phœnicaceæ. Palm.

From Puntarenas, Costa Rica. Presented by Mr. A. Garrido. Received August 22, 1918. Numbered May, 1919.

An ornamental palm, native to Costa Rica, 20 to 30 feet high, crowned by a magnificent cluster of large leaves with very numerous linear or linear-lanceolate leaflets, bright green above and paler beneath. The fruit is fibrous coated. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 1, p. 428.*)

47441 to 47445.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received April 30, 1919. Quoted notes by Mr. Harrison.

47441. CHENOPODIUM sp. Chenopodiaceæ.

"*Blackham's saltbush*. A species of *Chenopodium* grown in South Australia for fodder."

47442 and 47443. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

47442. "Large rock melon. Seed saved from a specimen weighing 18 pounds."

47443. "The *Egyptian* or *Shenum* rock melon, which weighs about 18 pounds."

47444 and 47445. CUCURBITA MAXIMA Duchesne. Cucurbitaceæ.

Pumpkin.

47444. "*Iron bark* pumpkin. An unrivaled table variety and a good keeper, 8 or 10 pounds in weight."

47445. "*Crown* pumpkin. A splendid table variety, very prolific and a good keeper, 5 to 10 pounds in weight."

47446. DIOSCOREA ALATA L. Dioscoreaceæ.**Yam.**

From Honolulu, Hawaii. Tubers presented by Mr. J. E. Higgins, horticulturist, Hawaii Agricultural Experiment Station. Received May 1, 1919.

"This yam, understood to be the best variety grown in Hawaii, has purple skin and flesh that is a little dark when cooked. Like many other varieties it is somewhat moist when cooked. Besides being boiled and mashed—a favorite method of preparation—yams may be baked or, after being boiled, may be sautéed or made into a salad like potatoes. The yam makes an especially good salad." (*R. A. Young.*)

47447. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

From Guelph, Ontario, Canada. Presented by Mr. James A. Neilson, Ontario Agricultural College. Received May 6, 1919.

"Lima beans which were grown near Iroquois, Ontario, in the garden of Mr. Leigh Harkness. Mr. Harkness states that this strain of beans has been grown by members of his family since 1876. The seed was first procured from a seedsman in Philadelphia, Pa. During the first few years that the beans were tried at Iroquois comparatively few ripened; but through selection of the earliest maturing and most productive plants for seed, a strain has been isolated which matures in a latitude which is farther north than where Lima beans can usually be grown.

"During the past summer I had the privilege of going through Mr. Harkness's garden and was very favorably impressed with the fine appearance of the beans. The plants were not very large, being about 16 to 18 inches in height and of about the same breadth, but they were very productive. I will venture to say that some of the plants produced as many as 75 pods from 3 to 4 inches in length.

"Iroquois is in Dundas County and is approximately 44° 45' north latitude. Considering the fact that Lima beans are native to climates which are much warmer than that of the St. Lawrence River Valley, I think that Mr. Harkness has attained very good results." (*Neilson.*)

47448 to 47491. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Edinburgh, Scotland. Tubers purchased from Dobbie & Co. Received May 8, 1919.

Introduced to be tested by the specialists of the Department for resistance to potato wart.

EARLY VARIETIES.

- 47448. *America.*
- 47449. *Arran Rose.*
- 47450. *Dargill Early.*
- 47451. *Eclipse.*
- 47452. *Edzell Blue.*
- 47453. *Eightyfold.*
- 47454. *Epicure.*
- 47455. *Exhibition Red Kidney.*
- 47456. *May Queen.*

EARLY VARIETIES—continued.

- 47457. *Midlothian Early.*
- 47458. *Resistant Snowdrop.*
- 47459. *Sharpe's Express.*
- 47460. *Witch Hill.*

SECOND EARLY VARIETIES.

- 47461. *Arran Comrade.*
- 47462. *British Queen.*
- 47463. *Climax.*

47448 to 47491—Continued.

SECOND EARLY VARIETIES—continued.

47464. *Great Scot*.
 47465. *Mauve Queen*.
 47466. *King George*.
 47467. *The Ally*.
 47468. *The Duchess*.

LATE VARIETIES.

47469. *Arran Chief*.
 47470. *Arran Victory*.
 47471. *Burnhouse Beauty*.
 47472. *Golden Wonder*.
 47473. *Irish Queen*.
 47474. *Kerr's Pink*.
 47475. *King Edward*.

The following two numbers are seedlings from the cross *Snowball* × *Myatt's Ashleaf*:

47490. No. 3. M. T.

LATE VARIETIES—continued.

47476. *Langworthy*.
 47477. *Lochar*.
 47478. *Majestic*.
 47479. *Nithsdale*.
 47480. *Rector*.
 47481. *St. Andrew*.
 47482. *Templar*.
 47483. *The Bishop*.
 47484. *The Factor*.
 47485. *The Favorite*.
 47486. *The Provost*.
 47487. *Tinwald Perfection*.
 47488. *Up-to-Date*.
 47489. *White City*.

47491. No. 16. M. T.

47492. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

From Richmond, Jamaica, British West Indies. Presented by Mr. Henry B. Wolcott. Received May 10, 1919.

"The development of commercial papaya culture depends upon obtaining hardier types which are suitable for market purposes. For this reason, seed is desired from all of the important regions in the Tropics where papayas are commonly grown. Jamaica is one of the best known of these regions." (*Wilson Popenoe*.)

47493 to 47495. *DIOSCOREA* spp. Dioscoreaceæ.

Yam.

From Singapore, Straits Settlements. Tubers presented by Mr. I. Henry Burkill, director, Botanic Gardens. Received April 17, 1919.

47493. *DIOSCOREA BULBIFERA* L.

This yam grows wild in Sylhet, Chittagong, and throughout the western Ghats to Bombay, and it is cultivated in the Western Presidency, especially in the Konkan. The tubers, after being dried and powdered, are applied to ulcers. The bulbules on the stems and the tubers under ground are used as vegetables. The latter are bitter, but are rendered eatable by being covered with ashes and steeped in cold water. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 128.)

47494. *DIOSCOREA HISPIDA* Dennst.

Mr. Burkill says in his letter announcing the shipment of these yams that this one is "poisonous, but its starch has been used in these parts from time immemorial when famine presses."

47495. *DIOSCOREA* sp.

"A fingered, lobulate yam from the Philippines. It is related to *Dioscorea pentaphylla* or to *D. cunningii*; excellent cooked, but the yield is too small." (*Burkill*.)

47496 to 47503.

From Entebbe, Uganda. Presented by the chief forestry officer, Forestry Department. Received April 29, 1919.

47496. ACACIA sp. Mimosaceæ.

An ornamental shrub or tree, with handsome foliage and cylindrical spikes or globular heads of yellow flowers.

47497. CHLOROPHORA EXCELSA (Welw.) Benth. and Hook. Moraceæ.

This is a valuable timber tree, native throughout most of tropical Africa. The wood is whitish, gradually changing to pale bay, and it is durable and easily worked. The tree often reaches a height of 130 feet, with a diameter of 10 feet, the trunk bare of branches for 60 feet. The thin, leathery, elliptic leaves are 6 to 7 inches long. The flowers, borne in dense spikes, are of two kinds: The staminate having long exserted white stamens, while the pistillate are inconspicuous. The slightly fleshy fruits are greenish yellow. (Adapted from Prain, *Flora of Tropical Africa*, vol. 6, pt. 2, p. 22.)

47498. ERYTHRINA EXCELSA Baker. Fabaceæ.

A tree, native to upper Guinea, growing to a height of 60 feet. It has glabrous branches which are armed with numerous sharp, straight, short prickles. The leaves are trifoliate, the broadly ovate central leaflet being 9 inches long. The bright-scarlet flowers are borne in dense racemes about 6 inches long. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 183.)

47499. MARKHAMIA PLATYCALYX (Baker) Sprague. Bignoniaceæ.
(*Dolichandrone platycalyx* Baker.)

A tree, 30 to 40 feet high, known in Uganda, where it is native, under the name *lusambia*. It is said to yield the finest of local timbers. The compound leaves are made up of five to nine obovate leaflets and the flowers, which are yellow striped with red, are borne in axillary and terminal panicles. (Adapted from Thiselton-Dyer, *Flora of Tropical Africa*, vol. 4, pt. 2, p. 525.)

47500. MONODORA MYRISTICA (Gaertn.) Dunal. Annonaceæ.

Calabash nutmeg.

A large, branching tree, native to Africa. The shining, pale-green leaves are confined to the ends of the branches. The fragrant flowers, borne singly in the axils of the leaves, are about 6 inches across, with 3 spreading, wavy-margined, yellow petals and three erect, creamy white petals, all six dotted with red. The fruit, 4 to 6 inches in diameter, contains a number of cylindrical seeds each about 1 inch long which have a flavor closely resembling that of the nutmeg. (Adapted from Curtis's *Botanical Magazine*, pl. 3059.)

47501. PAHUDIA AFRICANA (Smith) Prain. Cæsalpiniaceæ.
(*Afzelia africana* Smith.)

This large forest tree is a native of the Niger and Kongo Valleys in western Africa. The abruptly pinnate leaves are made up of four to five pairs of elliptical, thinly coriaceous leaflets 3 to 5 inches long. The small, white and red, fragrant flowers are borne in lax or dense racemes and are followed by smooth, thick, woody pods containing about 10 seeds. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 302.)

47496 to 47503—Continued.

47502. SPATHODEA NILOTICA Seem. Bignoniaceæ.

This is a bushy tree up to 20 feet in height; native to the upper Nile Valley and the Belgian Kongo. The opposite leaves are made up of 9 to 15 leathery leaflets covered with dense short hairs beneath. The scarlet flowers are borne in short, dense, terminal racemes and resemble closely those of the well-known *Spathodea campanulata*. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, p. 529.*)

47503. SYZYGIUM sp. Myrtaceæ.

A shrub or small tree probably bearing edible fruits; closely related to the Eugenias.

47504 to 47507. ELAEIS GUINEENSIS Jacq. Phœnicaceæ.

Oil palm.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Division of Plant Breeding, Department of Agriculture. Received April 24, 1919.

The oil palm is indigenous to the Guinea coast, where travelers found it used by the natives as early as the sixteenth century. From there it has gradually been disseminated throughout the Tropics.

The palm attains 15 to 20 meters in height; its trunk is erect and straight; the trees are monœcious, and the pistillate flowers develop into fruits (drupes) of the form and size of a prune, yellow or brownish at maturity, according to variety.

These fruits, numbering 1,000 to 1,500 upon a raceme, have a hard, woody endocarp surrounded with a fibrous and at the same time fleshy pulp, varying in thickness according to variety, and containing much oil. The seed contains an oleaginous kernel which is exported to Europe under the name *palmiste*.

In his Documents sur le Palmier à Huile, Chevalier mentions several varieties of this plant, differing in production and the quality of their oil. The development of improved varieties will be a matter of great importance.

The racemes are harvested by natives who are very skillful in climbing the palms. The principal season of ripening is toward the end of the rains, but the harvest continues more or less throughout the year.

The fruit yields two sorts of oils: One is extracted from the pulp (*huile de palme*) and the other from the seed (*huile de palmiste*).

Huile de palme is seen in Europe only in the solid state, since it does not become liquid at a lower temperature than 40° C. It is orange-yellow in color. When fresh it has a faint odor of violets and is employed by the natives who use it very extensively in cooking. It becomes rancid very quickly. Commercially, it is used in soap making.

In its native home (Dahomey, for example) the oil is extracted by fermenting the fruits in jars for several days; they are then mashed, the nuts are taken out, and the pulp is boiled in large kettles of water. The oil rises to the surface of the water and is skimmed off. Its purification is later brought about by boiling it for some time. The nuts, clean of pulp, are then broken with stones or hammers. The kernel (*palmiste*) is removed and dried, after which it is ready for use. These dried kernels are exported to Europe, and yield under pressure 40 to 42 per cent of palmiste oil which is white and has a melting point of about 25° C. This oil is employed in the making of fine soap. (Adapted from *Capus et Bois, Les Produits Coloniaux, 1912, p. 294.*)

The following are selected strains:

47504. "*Banga K.* 46 I."

47506. "*Nsombo C.* 42 II."

47505. "*Banga K.* 54 I."

47507. "*Nsombo D.* 24 II."

47508 and 47509. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava.

From San Marcos, Cuba. Presented by Mr. Robert Reid. Numbered in May, 1919.

"I am sending you two packages of seed of Peruvian guava, white and pink. The white is the best guava." (*Reid.*)

47508. White.

47509. Pink.

47510 to 47512.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received May 12, 1919. Quoted notes by Mr. Wester.

47510. *BOTOR TETRAGONOLOBA* (L.) Kuntze. Fabaceæ.

Goa bean.

(*Psophocarpus tetragonolobus* DC.)

"*Seguidilla.* A climbing bean with 4-winged pods which, when used as string beans while tender, are of excellent quality. They should be of great value in Porto Rico and Panama."

47511. *DRACAENA* sp. Liliaceæ.

"This *Dracaena* may prove a good pot plant for the conservatory, and of course for culture out of doors in Porto Rico and southern Florida."

47512. *GYNURA SARMENTOSA* (Blume) DC. Asteraceæ.

"The *Gynura* is a composite climber. It is a plant worthy of all the care possible to establish it in the West Indies and Florida."

47513. *PHYTELEPHAS MACROCARPA* Ruiz and Pav. Phœnicaceæ.

Ivory-nut palm.

From Para, Brazil. Burs purchased from Mr. George H. Pickerell, American consul. Received May 13, 1919.

An arborescent palm with a thick, rough, creeping trunk, from the under surface of which roots are given off; native to South America and Central America. The leaves which crown the trunk closely resemble those of the coconut palm in size, shape, and disposition. The flowers emit a strong perfume, especially the large, white, pistillate flowers which are, however, few in number. The fruits grow on the trunk just above the bases of the leaves in bunches of six or seven, and are called *cabeza de negro* by the natives of Colombia. The albumen of the seed is the so-called vegetable ivory, and this becomes whiter and more opaque on exposure to the air. (Adapted from *The West Indian Bulletin*, vol. 9, p. 279.)

47514. *PHYSALIS PERUVIANA* L. Solanaceæ.

Poha.

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart, superintendent, Danziger Estate, Beverly Hills. Received May 13, 1919.

"Native to temperate and tropical America, widely naturalized in many countries of the warmer zones. With double inaptness called the Cape gooseberry. A perennial herb; but for producing its fruit well it requires early renovation. The acidulous berries can be used as well for table fruit as for preserves. The dried fruit acts as a substitute for yeast. Doubtless several

other kinds of *Physalis* can be utilized in the same manner. In colder countries *Physalis peruviana* becomes annual. Seeds will keep for eight years." (Mueller, *Select Extra-Tropical Plants*, p. 377.)

47515. STEVIA REBAUDIANA Bertonii. Asteraceæ.

From Asuncion, Paraguay. Presented by Mr. H. H. Balch, American consul.
Received May 5, 1919.

Kaá-Heé. "This Paraguayan herb is of peculiar interest because of the very large saccharin content of the leaves. A fragment placed on the tongue seems sweeter than a lump of sugar of similar size. Several years ago the discovery that this plant, then called eupatorium, contained a substance many times sweeter than sugar was heralded by the press and excited the keen interest of sugar planters all over the world. The substance turned out to be a glucosid, and the anxiety of the sugar interests subsided." (David Fairchild.)

47516. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ.

(*Lucuma mammosa* Gaertn. f.)

Sapote.

From Laguna, Philippine Islands. Presented by the Bureau of Agriculture, Manila. Received May 14, 1919.

"One of the most important fruits of the Central American lowlands, well known to the Indians since time immemorial. It is wild in many regions, notably southern Mexico and Guatemala. It occurs most abundantly between sea level and 2,000 feet; at 3,000 feet it is still common, while at 4,000 it becomes scarce. It is generally believed that it will not succeed at 5,000 feet, but occasionally trees are seen at this elevation. In the highlands they are slow of growth and the fruit requires a long time to reach maturity.

"In the lowlands the sapote (Spanish orthography *zapote*) is a large forest tree, often 60 feet in height, with a thick trunk and stout branches. The Indians, when clearing land for coffee plantations, usually leave the sapote trees they encounter for the sake of their valuable fruits. The foliage is abundant and light green in color; the leaves are clustered toward the ends of the branchlets and are obovate or oblanceolate in outline, broadest toward the apex, and 4 to 10 inches long. The flowers are very small, produced in great numbers upon the stout branchlets.

"The fruit is elliptical in form, commonly 3 to 6 inches in length but sometimes larger. The skin is thick and woody, externally russet in color and somewhat scurfy. The flesh is salmon red, finely granular in texture, and of sweet, almost cloying flavor, in poor specimens strongly suggesting a squash or pumpkin. The single seed is large, shining brown except on the rough, whitish ventral surface, and is easily removed from the fruit.

"The Indians commonly eat the sapote out of hand. It is occasionally made into a rich preserve, however, and can be used in a few other ways. It is slightly inferior in quality to its near relative, the injerto or green sapote (*Achradelpha viridis*) of Guatemala.

"The seed of the sapote is an article of commerce in Central America. The large kernel is removed, roasted, and used to mix with cacao in the preparation of chocolate. According to some of the Indians, it imparts flavor to the chocolate; others say it is done to increase the bulk of the latter. In view of the high price of chocolate it seems more likely that sapote seeds are used as an adulterant, rather than for their flavor.

"In southern Mexico and Central America this fruit is known as *zapote* (from the Aztec *tzapotl*); in Guatemala the Indians know it under the Maya names *saltul*, *saltulul*, and *tulul*; in Cuba it is called *mamey colorado*; and in the Philippines *chico mamey*." (Wilson Popenoe.)

47517. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean.
(Pachyrhizus angulatus Rich.)

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director de la Estacion Experimental Agronomico. Received May 19, 1919.

Jicama de agua. These seeds have been introduced for the purpose of determining the botanical differences between the several forms of this species. This form was received under the name *Pachyrhizus tuberosus*.

47518. ZINZIBER OFFICINALE Roscoe. Zinziberaceæ. Ginger.

From Kingston, Jamaica. Roots presented by Mr. W. Harris, superintendent, Hope Gardens, Department of Agriculture. Received May 21, 1919.

This material was procured for experimentation.

47519. TRICHOSCYPHA sp. Anacardiaceæ.

From Loanda, Angola, Africa. Seeds presented by Mr. J. Gossweiler. Received May 21, 1919.

"No. 6882. A diœcious, palm-shaped tree, 25 meters in height, which produces on its trunk, about 2 meters above the ground, large bunches of peachlike, edible, succulent fruits. Quite a distinct, curious, and ornamental plant from Angola. March, 1919." (*Gossweiler.*)

47520 to 47523. TRIFOLIUM ALEXANDRINUM L. Fabaceæ.

Berseem.

From Cairo, Egypt. Presented by Mr. Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 21, 1919.

"To judge by its behavior at Bard, Calif., berseem seems to have considerable promise as a winter annual for the extreme Southwest. There are still problems in regard to proper planting dates, soil inoculation, etc., to be solved, but for the last three years the yields on the experimental plats at Bard have been large enough to encourage further trials." (*Roland McKee.*)

47520. No. 1.

47522. No. 3.

47521. No. 2.

47523. No. 4.

47524 and 47525.

From Ecuador. Presented by Dr. J. N. Rose, associate curator, U. S. National Herbarium, Washington, D. C. Received May 26, 1919. Quoted notes by Dr. Rose.

47524. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

"This *Carica* from Ambato (No. 22354) is very different from the other *Carica* (S. P. I. No. 46623) collected by me in Ecuador. It has a stout, thick trunk and a large, round top. Unlike most of the other species, male and female flowers are borne abundantly on the same plant. The fruit is small, about 3 inches long, and has three broad, low ribs. It is used chiefly in making dulces. It is usually grown in yards or gardens."

47525. TROPAEOLUM PELTOPHORUM Benth. Tropæolaceæ. Nasturtium.

"Several species of *Tropaeolum* are to be found in Ecuador. Between Chuncha and Huigra I collected this very interesting one (my No. 22408). It is a small creeping vine with peltate leaves and small yellow or orange flowers."

47526. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Naples, Italy. Presented by the Museo Commerciale e Coloniale of Naples, through Mr. B. Harvey Carroll, jr., American consul. Received June 11, 1919.

"Tomato seed of the variety 'fiascone' or 'fiaschetti,' of which the English translation would be 'little flagons' on account of the shape of the tomato. This is the type of tomato most largely grown in this consular district and most used for canning and for making tomato paste." (*Carroll*.)

47527. SAGUERUS PINNATUS Wurm. Phœnicaceæ. Sugar palm.
(*Arenga saccharifera* Labill.)

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Porto Rico Agricultural Experiment Station. Received May 14, 1919.

"The *gomuti* palm is one of the most useful of palms, and occurs in a wild state throughout the islands of the Indian Archipelago, but is more common in the interior, principally in the hilly districts, than on the sea coast; it is also very generally cultivated by the various people who inhabit that region. It is indigenous to Sonda and the Philippines, and is cultivated generally in tropical Asia. This palm attains a height of 30 to 40 feet and, in addition to its saccharine sap, furnishes a highly valuable black fibrous substance, ejoo fiber, superior in quality, cheapness, and durability to that obtained from the husk of the coconut, and renowned for its power of resisting moisture. It is used by the natives of the Indian islands for every purpose of cordage, and is known as *tsongli*. Underneath this material is found a substance of a soft gossamerlike texture, which is imported into China. It is applied as oakum in caulking the seams of ships, and more generally as tinder for kindling fire. It is for the latter purpose that it is chiefly in demand among the Chinese. In Malacca, the *gomuti*, there termed *kabong*, is cultivated principally for the juice which it yields for the manufacture of sugar." (*Simmonds, Tropical Agriculture*, p. 252.)

47528 to 47530. HEVEA SPRUCEANA (Benth.) Muell. Arg. Euphorbiaceæ.

From Para, Brazil. Presented by M. Au Lims de Vasconcellos Chaves. Received May 17, 1919.

"In the region where the 'seringueira barriguda' occurs I was told that its latex is of inferior quality and not used in the preparation of rubber. It is certain that in the lower Tapajoz country, where this plant appears to be most common, the best rubber is furnished by other species, principally *Hevea brasiliensis*. According to Dr. Ule, in the Jurua region the latex of *H. spruceana* is sometimes mixed with that of *H. brasiliensis*, with the result that the quality of the latter is impaired, and the product is known as 'borracha pobre.'" (*Huber, Observações sobre as Arvores de Borracha da Região Amazonica*, p. 11.)

47528. "Barriguda" 948.

47530. "Barriguda" 950.

47529. "Barriguda" 949.

47531. CUCURBITA sp. Cucurbitaceæ. Squash.

From Guayaquil, Ecuador. Presented by Dr. J. N. Rose, associate curator, United States National Herbarium, Washington, D. C. Received May 26, 1919.

"(Rose No. 24024. Collected August 11, 1918.) A squash found hanging in a tree; the vine was dead so that no foliage or flowering specimen could be obtained." (*Rose*.)

47532. IPOMOEA CAIRICA (L.) Sweet. Convolvulaceæ.*(I. palmata* Forsk.)**Morning-glory.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received May 28, 1919.

"Seeds of a white-flowered variety of *Ipomoea cairica*, extremely attractive and floriferous. Unlike most plants of this family, *I. cairica* is everblooming. The mauve-colored variety is the most popular climber in the Philippines and very rarely seeds, being propagated by cuttings. The plant from which these seeds were obtained is the only one I have seen with white flowers." (*Wester.*)

47533. FRAGARIA INSULARIS Rydb. Rosaceæ.**Strawberry.**

From Kingston, Jamaica. Presented by Mr. W. Harris, Hope Gardens. Received May 29, 1919.

The "wild strawberry" of Jamaica. Introduced for breeding experiments in developing new varieties of strawberries.

47534 and 47535. PRUNUS spp. Amygdalaceæ.

From Chevy Chase, Md. Collected by Dr. David Fairchild, at his home "In the Woods." Received June 3, 1919. Quoted notes by Dr. Fairchild.

47534. PRUNUS SUBHIRTELLA AUTUMNALIS Makino.

"Seed from a tree of the October blooming Japanese flowering cherry tree imported from the Yokohama Nursery Co., Yokohama, Japan, in 1906. I suggest it as a stock for commercial cherries because of its unusual vigor. Its trunk has been very free from disease, it does not sucker, its seedlings are not subject to the usual leaf blight (*Cylindrosporium padi*), and its seeds are regularly produced. The flowers are single and are produced both in autumn (October) and spring (about April 1)."

47535. PRUNUS SUBHIRTELLA PENDULA (Sieb.) Tanaka. Rosebud cherry.

"Seed gathered from drooping Japanese cherry trees imported in 1906 from the Yokohama Nursery Co., Yokohama, Japan. The unusual vigor of these drooping cherry trees, the fact that they belong to a long-lived species which in Japan grows to be 300 years old, combined with the facts that the leaves of the seedlings are free from the *Cylindrosporium padi* disease which attacks the Mazzard seedlings, that their trunks are vigorous and are free from disease such as gummosis, and also that the trees bear abundant crops of seeds, would seem to indicate that it is worth testing as a stock for our cultivated cherries, providing it should prove congenial. I have grown seedlings, and find that though uniformly vigorous some have the drooping habit whereas others are upright in growth, agreeing with the prototype which Wilson says occurs wild in the mountains of China and Japan and which he has called variety *ascendens*. No leaf blight has been observed among them. Gathered June 5 or 6, 1919."

47536. XANTHOSOMA sp. Araceæ.**Yautia.**

From Huigra, Ecuador. Corms grown until June, 1919, in the Department of Agriculture greenhouse, from material collected in September, 1918, by Dr. J. N. Rose, associate curator, U. S. National Herbarium.

"(No. 22574.) Found in a semiarid region, among cacti and other dry-land plants on a gravelly hillside, at an altitude of 4,000 feet." (*Rose.*)

"The corms, which seem to be usually only a few ounces in weight, are edible when cooked. They have a yellow interior, surrounded by a layer about three-sixteenths of an inch thick, of translucent white flesh; this is acrid, and requires longer cooking than the inner part to make it edible. The corms of this yautia should make a satisfactory starchy food in regions where the plant can be grown. The cormels are diminutive at first and appear to grow slowly." (R. A. Young.)

47537. TRIGONELLA FOENUM-GRÆCUM L. Fabaceæ. Fenugreek.

From Waukegan, Ill. Presented by Blatchford's Calf Meal Factory. Received June 5, 1919.

"*Egyptian fenugreek*, or *helba*, as it is called by the Arabs. This plant yields an important condiment; and its root system is so remarkably provided with tubercles that it is worthy of serious attention as a green-manure crop. The seeds are also of value for feeding purposes, and a large quantity of fodder is produced, which if cut before the seeds ripen is of excellent quality. The condition powders and condiment foods which are sold in England and America extensively and fed to ailing horses, cattle, and chickens, are mixtures of the fenugreek with other meals or grains. It is sometimes planted with berseem." (David Fairchild.)

47538 to 47547.

From Teheran, Persia. Presented by Col. J. N. Merrill, American legation. Received May 5, 1919.

47538. ALLIUM CEPA L. Liliaceæ.

Onion.

"Onion seed from Tarum, 25 miles west of Zenjan, in western Persia." (Merrill.)

The following grains are introduced for variety tests being carried on by specialists of the Department of Agriculture.

47539 to 47541. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. Barley.

47539. No. 1.

47541. No. 3.

47540. No. 2.

47542. SECALE CEREALE L. Poaceæ.

Rye.

47543 to 47547. TRITICUM AESTIVUM L. Poaceæ.

Wheat.

(*T. vulgare* Vill.)

47543. No. 1.

47546. No. 4.

47544. No. 2.

47547. No. 5.

47545. No. 3.

47548 to 47550.

From Richmond, Victoria, Australia. Presented by Mr. F. H. Baker. Received June 2, 1919. Quoted notes by Mr. Baker.

47548. BANKSIA MARGINATA Cav. Proteaceæ.

"She-oak. Grows along the coast."

This wood is porous, soft, spongy, and light. In the process of drying it twists and warps to a great extent, but when thoroughly seasoned it takes a fine polish and has a pleasing surface. It is used in cabinet-making and for indoor ornamental work. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 383.)

47548 to 47550—Continued.

47549. *CALLISTEMON RIGIDUS* R. Br. Myrtaceæ.

"Bottle brush."

A shrub, sometimes 30 feet tall, native to New South Wales. The leaves, 2 to 5 inches long, are narrowly linear, and the red flowers, with dark-red stamens an inch long, are borne in large, dense spikes. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 121.*)

47550. *CALLITRIS CUPRESSIFORMIS* Vent. Pinaceæ.
(*Frenela rhomboidea* Endl.)

"Murray pine. Grows in low districts of the mallee."

The timber is strong, durable, and close grained. It is much used for telegraph poles and for building purposes. (Adapted from *Maiden, Useful Native Plants of Australia, p. 543.*)

47551. *BAUHINIA* sp. Cæsalpiniaceæ.

From Cristobal, Canal Zone. Presented by Mr. S. P. Verner. Received June 2, 1919.

"I have a suspicion that this is the *cacique carey*." (Verner.)

"This name probably refers to a beautifully mottled wood which is used for making walking sticks." (W. E. Safford.)

47552 to 47555. *DAHLIA* spp. Asteraceæ.**Dahlia.**

From Leyden, the Netherlands. Seeds presented by the director of the botanical laboratory, Rijks Universiteit. Received June 2, 1919.

Introduced for experiments being conducted by specialists of the Department of Agriculture in tracing the ancestry of our cultivated dahlias.

47552. *DAHLIA MERCKII* Lehm.47553 to 47555. *DAHLIA VARIABILIS* Desf.

47553. Hybrids.

47555. Apparently mixed varieties.

47554. Variety *paeoniaeflora*.47556 to 47558. *SACCHARUM OFFICINARUM* L. Poaceæ.**Sugar cane.**

From Porto Rico. Cuttings from Dr. E. W. Brandes, Office of Sugar-Plant Investigations. Received April 25, 1919.

47556. *Rayada*.47558. *D17*.47557. *D117*.47559. *HYMENAEA COURBARIL* L. Cæsalpiniaceæ.**Courbaril.**

From Puerto Cabello, Carabobo, Venezuela. Fruits presented by Mr. J. G. Meyer, American vice consul. Received June 5, 1919.

This important tree flourishes throughout the tropical parts of the Western Hemisphere. The pods contain an edible substance surrounding the seeds, and the wood is fine grained, hard, and heavy. The principal use of the tree is in furnishing South American copal, a gum which exudes from wounds in the bark [and is also said to exude naturally from the roots and lower part of the trunk]. Some of the trees in the Brazilian forest are 6 feet in diameter above the buttresses and are estimated to be more than 1,000 years old. These trees produce large quantities of gum during their lifetime, and the spot in which

one has stood often yields 5 to 10 barrels of the best gum, which is used in the manufacture of varnishes. (Adapted from *Bulletin of the Pan-American Union*, vol. 43, p. 453.)

47560. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.

From Port of Spain, Trinidad, British West Indies. Tubers presented by Mr. E. Andre. Received June 5, 1919.

"These dasheens were bought in the Port of Spain ground-provision market; they are a fair sample of what is sold under the name of dasheen, at prices that are subject to a good deal of fluctuation. The price during the last few days has been 3 cents per pound retail, which is also the price of eddoes. All starch foods are high; wheaten flour sets the price.

"Last year I conducted at the Dabadie Nurseries a pretty exhaustive set of experiments in the growing of dasheens and Chinese eddoes. I may say that only here and there, in some particularly favored patch close to the river bank, did an occasional dasheen give anything like a respectable tuber; the poor clay at Dabadie did not suit them. It was otherwise with the Chinese eddoes which did remarkably well with but little care. The dasheen requires well-watered, low-lying land for remunerative crops." (*Andre.*)

"The buds, or shoots, from the corms and cormels of this dasheen are white or greenish white, while those from the one heretofore grown by the United States Department of Agriculture as the Trinidad dasheen have pink shoots. The quality of the tested specimen of this new variety was good." (*R. A. Young.*)

47561. KOKIA ROCKII KAUAIENSIS Rock. Malvaceæ. Kokio.

From Honolulu, Hawaii. Presented by Mr. J. F. Rock. Received June 10, 1919.

"Seeds of a new variety of *Kokia rockii*, from the island of Kauai, discovered by Mr. A. Knudsen. There is only one specimen of the tree; it grows in the very dry region of Kauai, several miles from Mana, in Koaloha canyon, on the edge of a cliff, which saved it from destruction by cattle. I think the discovery of this form is one of the most noteworthy since the days of Hillebrand." (*Rock.*)

47562 and 47563. CARICA PAPAYA L. Papayaceæ. Papaya.

From Merida, Yucatan, Mexico. Presented by Mr. G. O. Totten, Washington, D. C. Received June 10, 1919. Quoted notes by Mr. Totten.

47562. "Seeds of a medium-sized papaya which grows only about 12 feet high and bears fruits of the finest flavor of any we ever tasted. They were brought to Merida from Campeche, Yucatan."

47563. "Seeds given to me by Mr. E. H. Thompson, former consul at Merida, who declared they were from a variety of very fine quality."

47564. DIOSCOREA LATIFOLIA Benth. Dioscoreaceæ. Acom.

From Bahia, Brazil. Tubers presented by Sr. V. A. Argollo Ferrão. Received June 11, 1919.

"*Inhame figado de peru* [turkey-liver yam] or *caissara*. This very interesting inhame is cultivated here in some localities, but is rare and is not found in the markets. The tubercles are borne on the vine. I had a few last year and planted them in December, when they were starting. I am now (April 28) picking the crop. Those I have eaten were boiled, and I found them very good. I think it is a plant worth propagating, for it gives an excellent substi-

tute for the potato, is productive, and the tubercles keep for several months without deterioration." (*Argollo Ferrão.*)

"Aerial tubers constitute the crop of this yam. The angular form of the tuber suggests the name 'turkey liver.' The flesh is of a yellowish color and very firm when cooked. The tubers are eaten boiled, fried, or baked. The flavor is mild, and there is just a suggestion of sharpness in the taste, which is in its favor." (*R. A. Young.*)

For an illustration of these aerial tubers, see Plate II.

47565. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote.

Plants growing at the Plant-Introduction Field Station, Miami, Fla. Numbered June 27, 1919, for convenience in recording distribution.

"A productive, large-fruited variety which originated at the Miami garden. The fruits are oval to round, yellow-green, and sometimes nearly 4 inches in length. The flesh is cream colored, smooth, and sweet, with a trace of bitterness." (*Wilson Popenoe.*)

47566. TABERNAEMONTANA sp. Apocynaceæ.

From Guinea Grass, British Honduras. Presented by Mr. D. Masson. Received June 4, 1919.

"A sample of chicle and seeds from the same tree which in Central America is called *courgeton*." (*Masson.*)

47567. PRUNUS SERRULATA Lindl. Amygdalaceæ.

Flowering cherry.

From Chevy Chase, Md. Collected by Dr. David Fairchild, at his home "In the Woods." Received June 8, 1919.

"*Daizen*. Seeds from a tree at the southeast corner of my study. This tree, in fact all the *daizen* trees on my place, have characterized themselves by their regular fruiting habit, the cherry fragrance of their single white flowers, and the vigor of their trunks and freedom from suckers. These trees have been particularly free from disease and have struck me as promising for stock purposes. They were bought originally from the Yokohama Nursery Co., Yokohama, Japan, in the spring of 1906, and are now 13 years old and 20 feet or so high, with trunks about 6 inches in diameter.

"It is possible, of course, that the plants from these seeds will show the result of crossing with other varieties, such as *Murasaki* and *Jobeni* and *Naden*, with which they are closely planted. These varietal names are the ones attached to the trees when they were sent by the Yokohama Nursery Co." (*Fairchild.*)

47568. DOLICHOS LABLAB L. Fabaceæ.

Bonavist bean.

From St. Vincent, British West Indies. Presented by Prof. S. C. Harland, assistant for cotton research, Agricultural Experiment Station. Received June 11, 1919.

"*St. Vincent Bush*. I discovered this type of bean in a peasant holding in St. Vincent in the spring of 1915 and found that it bred true when put into pedigree culture. Under cultivation it produces a wiry bush from 18 inches to 2 feet in height, and bears a heavy crop when environmental conditions are favorable. As a cover crop for orchards in Florida I think it is worth a trial.

"With me the plants of the bush *Dolichos* always flower when 5 weeks old and ripe pods are produced at 8 weeks. Often a second crop of pods is produced. The beans are quite palatable, though they are inferior to Lima beans.

"I should mention that in the course of my inheritance studies on *Dolichos*, I have established that the bush form behaves as a simple Mendelian recessive to the climbing form. In a cross between *St. Vincent Bush* (white) and *Purple Soudan* climber, I have isolated pure bush types of varying vegetative habits. Some are much more vigorous than the original bush parent. I have also succeeded in isolating a bush form of *Vilmorin's Stringless* by crossing *Stringless* with the native bush." (*Harland.*)

47569. STIZOLOBIUM BRACTEATUM (DC.) Kuntze. Fabaceæ.

From Namkham, Burma, India. Presented by Mr. Robert Harper. Received June 21, 1919.

Introduced for experiments being carried on with various forms of velvet beans.

47570 to 47575.

From Auckland, New Zealand. Presented by Mr. James W. Poynton. Received June 12, 1919. Quoted notes by Mr. Poynton.

47570. MERYTA SINCLAIRII (Hook. f.) Seem. Araliaceæ.

"Native name *puka*. The *Meryta* has large leaves, and is rather a striking-looking small tree much grown in gardens for ornament. For a time it was believed the rarest tree in the world, only one plant being known. One of our early botanists saw a tree near a large native camp, but the Maoris declared it was taboo and forbade him under penalty of death to touch it. He reported its discovery and described it as accurately as he could. No other naturalist had ever seen such a tree in New Zealand, and much interest was aroused by his report. Twelve years afterward he returned to the place and found the camp deserted; but the tree was still there. He got some leaves and flowers and sent them to the eminent botanist, Sinclair, who classified it, and it is now named after him. Subsequently 27 plants were found on some islands in the Hawaki Gulf near Auckland, and from them seeds were obtained for distribution. The plants are male and female."

47571. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

"The Christmas tree of our early settlers; native name *pohutukawa*. It comes into bloom mostly during Christmas week (midsummer here). The flowers are deep red, and the tree is very pretty when in flower. It grows well by the seaside, gives good shelter, and endures salt spray splendidly. The wood is hard and durable, but the tree does not grow straight, being bent at the branches. For this reason it was much sought after for knees for boat building."

47572. PHORMIUM TENAX Forst. Liliaceæ. New Zealand flax.

"I gathered the flax seed myself from some strong, well-fibered plants growing in the Court House grounds at Hamilton in the Auckland Province of New Zealand. I can therefore warrant it to be of good pedigree and freshly gathered."

47573. PHYLLOCLADUS TRICHOMANOIDES D. Don. Taxaceæ.

"Cones of the remarkable 'celery-topped pine;' native name *tanekaha*. The bark contains two valuable red dyes and about 22 per cent of tannin.

47570 to 47575—Continued.

When about 18 months old the leaves become aborted and the leafstalks expand, become leaflike, and take on all the functions of leaves. Some of the acacias do this; but this, I believe, is the only pine with this habit."

47574 and 47575. VERONICA spp. Scrophulariaceæ.

"The veronicas in New Zealand are the most numerous of special plants. We have about 550 species of plants, and of these the veronicas number over 100. In the northern hemisphere they are merely herbs; some species here attain the dignity of trees, being 30 feet high and as thick as a man's body; most of them are shrubs."

47574. VERONICA sp.

"This one is a large-leaved shrub with purple flowers."

47575. VERONICA sp.

"This species is a smaller leaved shrub with light-blue flowers."

47576. MEIBOMIA LEOCARPA (Spreng.) Kuntze. Fabaceæ.
(*Desmodium leiocarpum* Don.)

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received June 14, 1919.

"This plant was introduced by me from Brazil and has shown itself to be a very good legume fodder for Cuba. I am now experimenting to see if it can be propagated by cuttings." (*Calvino.*)

47577. CROCUS SATIVUS L. Iridaceæ. Saffron.

From Valencia, Spain. Bulbs presented by Mr. J. R. Putnam, American consul. Received June 16, 1919.

A light-purple autumn-flowering crocus native to southern Europe. Commercial saffron consists of the deep orange-colored stigmas of the flowers gathered with part of the style and carefully dried. A grain of good saffron contains the stigmas and styles of 9 flowers, and over 4,000 flowers are required to yield an ounce of saffron. The principal use is to furnish an orange-red dye. (Adapted from *Lindley, Treasury of Botany, vol. 1, p. 349.*)

47578 and 47579.

From Miami, Fla. Plants grown at the Plant-Introduction Field Station at Miami. Numbered for convenience in recording distribution in June, 1919.

47578. JUBAEA CHILENSIS (Molina) Baill. Phœnicaceæ. Palm.
(*J. spectabilis* H. B. K.)

"This is the palm from which the palm honey of Chile is made. This sirup is the most delicious I have ever tasted. It is superior, in my estimation, to maple sirup, being milder and not cloying the palate as the latter does. In 40 years the trees will be ready to tap for the sap from which this sirup is made. It is a very ornamental palm but a slow grower. It thrives on very dry, poor soils, and requires very little water. Hitherto palms have been felled, but they can be tapped, I am assured, just as maple trees are tapped." (*David Fairchild.*)

47578 and 47579—Continued.**47579. PUERARIA THUNBERGIANA** (Sieb. and Zucc.) Benth. Fabaceæ.**Kudzu.**

"The kudzu vine is a large-leaved, rapid-growing legume, native to Japan. It succeeds well in nearly all sections of the United States. It is an excellent vine for arbors or wherever a quick cover is required. It furnishes an abundant and nutritious forage, and is of value for planting on rocky land or hillsides where cultivation is difficult. The roots produce starch of good quality." (J. H. Johnson.)

In moist, rich woodland it becomes a troublesome weed.

47580 to 47583.

Plants grown at the Plant-Introduction Field Station, Brooksville, Fla. Numbered for convenience in recording distribution in June, 1919.

47580. ACACIA LONGIFOLIA (Andrews) Willd. Mimosaceæ.

A bushy acacia, useful for binding coast sands since the lower branches root very readily and spread quickly. The bark, while not so high in tannin as that of *Acacia mollissima*, is used chiefly in tanning sheep skins. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 7.)

47581. HYPERICUM CANARIENSE L. Hypericaceæ. **St.-John's-wort.**

"A species native to the Canary Islands. It forms a shrub up to 15 feet in height. The leaves are oblong lance shaped, narrowed at the base, and 2 to 3 inches long. The flowers, produced in panicles, are 1 to 1½ inches across. Similar to *Hypericum floribundum*." (J. H. Johnson.)

47582. BULBINE LONGISCAPA (Jacq.) Willd. Liliaceæ.

"A stemless, liliaceous perennial with a small tuberous rootstock—allied to *Anthericum*. The leaves are fleshy and very glaucous, 8 to 12 inches in length. The flower spike is a foot or more long, and the flowers are bright yellow, one-third of an inch long, the perianth segments reflexing when fully expanded. The capsule is the size of a pea. The plant is native to South Africa." (J. H. Johnson.)

47583. AGAVE VERSCHAFFELTII Lem. Amaryllidaceæ.

A variable species from southern Mexico, many named varieties being in cultivation. The leaves are 3 inches wide by 6 to 8 inches long, glaucous, tipped with red-brown spines and armed with long, rusty teeth on large, fleshy prominences. The inflorescence is rather sparse. (Adapted from Bailey, *Standard Cyclopedia of Horticulture*, vol. 1, p. 233.)

47584 to 47592.

From Colombia. Collected by Mr. Alfred Lenz, Flushing, Long Island. Received June 16, 1919. Quoted notes by Wilson Popenoe.

47584. ACHRAS ZAPOTA L. Sapotaceæ.**Sapodilla.**

"The sapodilla or chicozapote is the best of the sapotaceous fruits. It is common in many parts of tropical America (found wild in several regions) and is cultivated successfully in southern Florida, where it merits commercial exploitation. The fruits, which are picked when still hard, can be shipped to distant markets. Choice varieties should be propagated by budding."

47584 to 47592—Continued.

47585. *ANNONA SQUAMOSA* L. Annonaceæ. **Sugar-apple.**

"One of the best of the anonas. It succeeds only in regions where there is little frost. It does well in southern Florida, but has never been successfully grown in California. New varieties should be tested to obtain superior ones combining productiveness with good size and quality of fruit."

47586. *CARICA PAPAYA* L. Papayaceæ. **Papaya.**

"The papaya succeeds admirably in southern Florida. The greatest difficulty which has been encountered thus far is the perishable nature of the fruit. This variety may aid in the production of varieties with better shipping qualities."

47587. *CARYOCAR* sp. Caryocaraceæ.

"This genus yields the souari nut, sometimes exported from South America to Europe. There are several species which produce edible nuts. Probably the only section of the United States in which they can be planted with reasonable hopes of success is extreme southern Florida."

47588. *CROTALARIA* sp. Fabaceæ.

A legume which may have possibilities as a green-manure or as a cover crop.

47589. *MIRABILIS JALAPA* L. Nyctaginaceæ.

Seeds of this herbaceous perennial with fragrant red, white, yellow, and variegated flowers are always interesting to grow in the search for new varieties.

47590. *PHASEOLUS COCCINEUS* L. Fabaceæ. **Scarlet Runner bean.**

A rather small variety having light-brown seeds with dark-brown markings.

47591. *PHASEOLUS VULGARIS* L. Fabaceæ. **Common bean.**

Small tan-colored beans with dark-brown markings.

47592. *ZEA MAYS* L. Poaceæ. **Corn.**

Ears of a small variety having flat, flinty kernels resembling pop corn.

47593. *OCHROMA LAGOPUS* Swartz. Bombacaceæ. **Balsa wood.**

From Santiago de las Vegas, Cuba. Presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received June 24, 1919.

A wild tree, rather abundant, growing about 40 feet high and a foot or more in diameter. The wood is white, stained with red, luminous, and sometimes silky in aspect. It is very porous, the lightest of all woods, lighter even than true cork. In Trinidad and other places it forms an article of commerce with fishermen who use it in place of cork on their nets. (Adapted from *Cook and Collins, Economic Plants of Porto Rico*, p. 205.)

"In the past ten years this wood has sprung into prominence as an insulating material and for use in life rafts. Refrigerators, the thick walls of which are made of this wood, have kept ice for two weeks; refrigerator cars of unusual lightness and extraordinary insulating qualities are now being made of it, and a motor boat has been made nonsinkable by using it to fill the air spaces in its hull. Plantations of Balsa trees are even now being made in Central America under the stimulus of a large commercial company." (*David Fairchild.*)

47594. CASSIA sp. Cæsalpiniaceæ.

Plants growing at the Yarrow Plant-Introduction Field Station, Rockville, Md. Numbered in June, 1919, for convenience in recording distribution.

Grown from seeds received from Dr. A. Robertson Proschowsky, Nice, France, under the name *Cassia arborescens*.

47595 and 47596.

From Kabul, Afghanistan. Presented by Mr. A. C. Jewett, Fresno, Calif. Received June 18, 1919. Quoted notes by Mr. Jewett.

47595. BRASSICA sp. Brassicaceæ.

"A vegetable much like a turnip but which grows above the ground like a cabbage."

47596. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

"This melon grows about a foot long and 7 inches in diameter. It is a late melon, ripening in September, and keeps for some time; I have had them at Christmas time. The meat is firmer than that of most muskmelons, is not very yellow, and is of good flavor."

47597. TRIFOLIUM PANORMITANUM Presl. Fabaceæ.**Palermo clover.**

From Algiers, Algeria. Presented by Dr. L. Trabut. Received June 19, 1919.

"A clover closely resembling *Trifolium alexandrinum*, which grows vigorously in damp places along the coast. It is easily distinguished by its dark-green color and its larger leaves. This clover makes a good forage, but does not as yet lend itself readily to cultivation. Hybridization experiments with berseem are being carried on. This Palermo clover shows local variations which should be studied." (*Trabut.*)

47598 to 47601. ZEA MAYS L. Poaceæ.**Corn.**

From Insein, Southern Circle, Burma, India. Presented by Mr. A. McKerral, deputy director of agriculture. Received June 23, 1919.

"Different kinds of maize grown by the Chins." (*McKerral.*)

47598. Nim-Florr.**47600. Nim-Doom.****47599. Nim-Pe.****47601. Nim-Leng.****47602. SOLANUM MELONGENA L. Solanaceæ.****Eggplant.**

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received June 24, 1919.

"An eggplant said to be of very good quality; it is a cross between the *American* and the native long slender variety." (*Wester.*)

47603 to 47616. BRASSICA OLERACEA BOTRYTIS L. Brassicaceæ.**Broccoli.**

From Reading, England. Purchased from Sutton & Sons. Received June 25, 1919.

These seeds have been introduced for specialists in the department who are studying the disease resistance of the several varieties.

47603. <i>Autumn Protecting.</i>	47610. <i>Safeguard Protecting.</i>
47604. <i>Bouquet.</i>	47611. <i>Satisfaction.</i>
47605. <i>Improved White Sprouting.</i>	47612. <i>Snow-White.</i>
47606. <i>Late Queen.</i>	47613. <i>Standwell.</i>
47607. <i>Michaelmas White.</i>	47614. <i>Superb Early White.</i>
47608. <i>Purple Sprouting.</i>	47615. <i>Vanguard.</i>
47609. <i>Reading Giant.</i>	47616. <i>Whitsuntide.</i>

47617. COIX LACRYMA-JOBI L. Poaceæ.

Job's-tears.

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, through Mr. Augustus I. Hasskarl, vice consul, Rio de Janeiro. Received June 23, 1919.

"*Lagrimas de Nossa Senhora* (Tears of Our Lady). I found this plant growing in a natural state in Brazil, and have had it under experiment for about three years at one of the Leopoldina Railway Co.'s experiment stations. It is a very vigorous grower and produces under almost any conditions here great crops of excellent forage. It reaches a height of 10 feet or over, and a single plant often produces 40 to 50 shoots. The yield in green forage under favorable conditions runs very high, from 10 to even 20 tons to the acre, and the yield of grain is also very heavy. The seeds are very hard and require crushing or grinding before feeding, if allowed to mature. But I am of the opinion that the best results may be obtained from the use of the plant for soiling, cutting four or five times during the year.

"The plant stools well, continually sending up new shoots or stems, thereby renewing itself, and lasting here for some years. In temperate climates it would be an annual, as is the case with teosinte and maize. Its favorite habitat is a low, moist, or even marshy soil, but it will grow successfully in dry soils also. I have seen it growing luxuriantly in very wet localities, even in water." (Day.)

47618. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received June 23, 1919.

"The *sitao*, a climbing vine with long, slender pods that may be eaten as string beans and are very good when picked tender." (Wester.)

47619 and 47620.

From Los Banos, Philippine Islands. Presented by Prof. C. F. Baker, dean, College of Agriculture, University of the Philippines. Received June 24, 1919. Quoted notes by Prof. Baker.

47619. ABECA IPOT Beccari. Phoenicaceæ.

Palm.

"An ornamental palm, about 20 feet high; collected by M. Villaraza, in March, 1919, from cultivated plants at Majayjay, Province of Laguna. Local name, *bunga*."

47620. PYGEUM PRESLI Merr. Amygdalaceæ.

"A tree about 50 feet in height; collected by Nem. Catalan, March 26, 1919, from trees growing on the college farm. Local name, *lagò*. Used for lumber."

47621 and 47622. ORYZA SATIVA L. Poaceæ.**Rice.**

From Cienaga, Magdalena, Colombia. Presented by Mr. A. Palacio. Received June 25, 1919.

Introduced for the use of Department specialists studying different varieties of rice.

47621. Canilla.**47622. Criollo.****47623. ACTINIDIA KOLOMIKTA (Maxim.) Rupr. Dilleniaceæ.**

Grown at the Yarrow Plant-Introduction Field Station, Rockville, Md., and numbered in June, 1919, for convenience in distribution.

"A large-growing, deciduous, ornamental climber, native to Amur, China, and Japan. The flowers are one-half to five-eighths of an inch in diameter, white with purple stamens, and are produced in abundance. The fruit is the size of a gooseberry or small plum, and has somewhat the flavor of the former. The foliage is deep green, tinted with red, and is very ornamental." (*J. H. Johnson.*)

47624. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote.

Plants growing at the Plant-Introduction Field Station, Chico, Calif. Numbered in June, 1919, for convenience in recording distribution.

Grown from seed collected by Mr. G. P. Rixford on the William A. Spinks place, Duarte, Calif.

47625 to 47628. ZEA MAYS L. Poaceæ.**Corn.**

From Kirin, China. Presented by Mr. Joseph Bailie. Received June 30, 1919.

"Corn from four separate ears. They may be all the same variety, but the ears looked different." (*Bailie.*)

47625. No. 1.**47627. No. 3.****47626. No. 2.****47628. No. 4.****47629 to 47830.**

From Darjiling, Bengal, India. A collection of seeds presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received May 1, 1919.

47629. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ.**Maple.**

This is the principal maple of the northeastern Himalayas, where it grows at an altitude of 7,000 feet and more. The leaves are a beautiful green with red petioles. The grayish white close-grained wood is moderately hard and is extensively used for planking and for tea boxes. The tree reproduces freely by seed or by coppice and plays an important part in the regeneration of the hill forests. (*Adapted from Watt, Dictionary of the Economic Products of India, vol. 1, p. 69.*)

47630. ACER HOOKERI Miquel. Aceraceæ.**Maple.**

A tree about 45 feet in height, with undivided heart-shaped leaves; native to Sikkim, India, where it grows at altitudes of 8,000 to 10,000 feet. The wood is gray, and weighs 37 pounds to the cubic foot. (*Adapted from Watt, Dictionary of the Economic Products of India, vol. 1, p. 69, and Hooker, Flora of British India, vol. 1, p. 694.*)

47631. ACER LAEVIGATUM Wall. Aceraceæ.**Maple.**

A handsome tree with a broad, oval crown, native to the Himalayas from the Jumna eastward to Bhutan. The leaves are undivided and

47629 to 47830—Continued.

green on both surfaces. The wood is white, shining, hard, and close grained. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 70.*)

47632. ACER THOMSONI Miquel. Aceraceæ.

Maple.

A large tree, often 150 feet in height, found in the hills of Sikkim and Bhutan, India, at an altitude of 4,000 feet. The thick, coarse, 3-lobed leaves are a foot or more in length, and the wood is grayish white, soft, and very brittle. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 71.*)

47633. ACTINIDIA STRIGOSA Hook. f. and Thoms. Dilleniaceæ.

A shrubby climber, native to Sikkim, India, with white flowers in axillary cymes and edible, ovoid, mucilaginous fruits a little more than an inch in length. (Adapted from *Hooker, Flora of British India, vol. 1, p. 286.*)

47634. TRICHOSPORUM BRACTEATUM (Wall.) Kuntze. Gesneriaceæ.
(*Aeschynanthus bracteata* Wall.)

An epiphytic shrubby plant, native to the temperate regions of the Himalayas at altitudes of 2,000 to 8,000 feet. The narrow, fleshy leaves are about 4 inches in length and the scarlet flowers are over an inch long. (Adapted from *Hooker, Flora of British India, vol. 4, p. 342.*)

47635. ALNUS NEPALENSIS D. Don. Betulaceæ.

Alder.

A tall, sparsely branched, deciduous tree with dark-green bark which becomes brown and fissured with age. The bark is used in tanning and dyeing and is said to enter into the composition of native red inks. The wood is soft, close, and even grained, and is used for tea boxes. The tree grows rapidly, and in Nepal, where it is native, it thrives on the damp, uncultivable banks of rocky streams and river beds. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 176.*)

47636. ALPINIA ALLUGHAS (Retz.) Roscoe. Zinziberaceæ.

A common plant in low, moist places in eastern India. It has polished, lanceolate leaves and large, numerous flowers of a beautiful rose color. The aromatic rhizomes are used by the Indians medicinally. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 192,* and *Firminger, Manual of Gardening for India, p. 357.*)

47637. AMERIMNON SISSOO (Roxb.) Kuntze. Fabaceæ.
(*Dalbergia sissoo* Roxb.)

"The timber is very valuable and is one of the numerous kinds which are known in the timber trade as rosewood. The heartwood is brownish, and it possesses great strength and elasticity. It is also heavy, its weight being about 50 pounds to the cubic foot. The wood is used for all kinds of joinery and cabinetwork, carving, building material, gun carriages, etc. It requires a tropical or subtropical temperature." (*Gardeners' Chronicle, 3d ser., vol. 55, p. 82.*)

47638. ANEMONE RIVULARIS Buch.-Ham. Ranunculaceæ.

A woody ornamental plant from 1 to 3 feet in height, with the 3-parted basal leaves up to 6 inches in diameter, and white or bluish flowers, 1 to 1½ inches long, in compound cymes. It is a native of temperate regions in India and Ceylon above 5,000 feet altitude. (Adapted from *Hooker, Flora of British India, vol. 1, p. 9.*)

47629 to 47830—Continued.

47639. ANEMONE VITIFOLIA Buch.-Ham. Ranunculaceæ.

This Himalayan plant resembles in many respects the well-known Japanese anemone. The woolly foliage, however, is thicker and larger. The large flowers are pure white and are produced very freely during the summer months. This plant is not quite so hardy as its Japanese relative. (Adapted from *The Gardeners' Chronicle*, 3d ser., vol. 61, p. 88.)

47640. ARDISIA INVOLUCRATA Kurz. Myrsinaceæ.

A pink-flowered, evergreen shrub, 3 to 6 feet high, native to Sikkim, India. The globose berries are one-fourth of an inch in diameter. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 528.)

47641. ARUNDINELLA HISPIDA (Humb. and Bonpl.) Kuntze. Poaceæ.

(*A. brasiliensis* Raddi.)

Grass.

A perennial grass with a stout, hard, creeping rootstock, and with a simple or branched stem from 1 to 5 feet in length. The leaves are from 6 to 12 inches long, and the panicles are 4 to 18 inches in length. This is an abundant grass throughout the hilly parts of India, and is distributed through the East Indies, South Africa, Australia, and tropical America. In Sao Paulo, Brazil, it is considered a good forage plant for dry lands. (Adapted from *Correa, Flora do Brazil*, p. 128, and *Hooker, Flora of British India*, vol. 7, p. 73.)

47642. ASTER HIMALAICUS C. B. Clarke. Asteraceæ.

Aster.

A small, robust Himalayan aster with rather hairy, leafy, ascending stems and solitary flower heads about 1½ inches in diameter. The 40 to 50 ligules are very narrow. In Sikkim, India, this aster is found at altitudes of 13,000 to 15,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 250.)

47643. ASTILBE RIVULARIS Buch.-Ham. Saxifragaceæ.

An erect, herbaceous plant with a perennial creeping rootstock, alternate compound leaves, and terminal panicles of small greenish flowers. It is very common in the temperate portions of the Indian Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 389.)

47644. BEGONIA AMOENA Wall. Begoniaceæ.

Begonia.

A stemless or short-stemmed tuberous-rooted plant, native to the temperate regions of the central and western Himalayas, with ovate or oblong acuminate leaves about 3 inches long. The few-flowered scape is from 3 to 6 inches in height. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 642.)

47645. BERBERIS INSIGNIS Hook. f. and Thoms. Berberidaceæ. **Barberry.**

"This magnificent species forms a large bush, with deep-green leaves 7 inches long and bunches of yellow flowers." (*Hooker, Himalayan Journals*, vol. 1, p. 340.)

47646. BERBERIS NAPAULENSIS (DC.) Spreng. Berberidaceæ. **Barberry.**

A shrub or small tree, common in eastern India at altitudes above 5,000 feet. The wood is bright yellow and hard, is used to a small extent by the natives as a yellow dye, and because of its handsome color might be useful for inlaying. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 446.)

47629 to 47830—Continued.

47647. *BETULA UTILIS* D. Don. Betulaceæ.

Birch.

A moderate-sized tree, 40 to 50 feet in height, with smooth shining whitish bark and irregularly serrate leaves. The tough hard wood is pinkish white and even grained. (Adapted from *Kirtikar, Indian Medicinal Plants, pt. 2, p. 1213.*)

47648. *BRASSAIOPSIS SPECIOSA* Dec. and Planch. Araliaceæ.

A small tree with the upper parts of the branches prickly and with digitate leaves. The panicle is large, sometimes more than a foot long. The tree is a native of Nepal, Assam, and Burma, India. (Adapted from *Hooker, Flora of British India, vol. 2, p. 737.*)

47649. *BUCKLANDIA POPULNEA* R. Br. Hamamelidaceæ.

A large evergreen tree, up to 80 feet in height, native to the eastern Himalayas at altitudes of 3,000 to 8,000 feet. The wood is grayish brown, close grained, and durable, and is very much used in Darjiling for planking and for doors and window frames. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 545.*)

47650. *BUDDLEIA ASIATICA* Lour. Loganiaceæ.

A graceful, large shrub or small tree, common through India and the Malay Peninsula, ascending to 6,000 feet in the Nilghiri Hills. The lanceolate leaves are 4 to 8 inches long, and the small, white, sweet-scented flowers are borne in long, slender, spikelike racemes. This plant flowers continuously for three months in India. (Adapted from *Curtis's Botanical Magazine, pl. 6323.*)

47651. *CALLICARPA RUBELLA* Lindl. Verbenaceæ.

A small Chinese shrub, about 2 feet in height, entirely covered with short hairs. The flat, yellowish green leaves are 4 to 5 inches long, with strong dentations and cordate bases. The small pink flowers are borne in many-flowered cymes. (Adapted from *Botanical Register, vol. 11, p. 883.*)

47652. *CALLICARPA VESTITA* Wall. Verbenaceæ.

A medium-sized tree, often 30 feet high, with a thick trunk and ovate, acute leaves with silky white lower surfaces, 4 to 10 inches long. The lavender flowers are in axillary cymes. It is a native of Nepal and Sikkim, India, where it ascends to 4,000 feet. (Adapted from *Hooker, Flora of British India, vol. 4, p. 567.*)

47653. *CAPPARIS OLACIFOLIA* Hook. f. and Thoms. Capparidaceæ.

An erect thorny shrub, 6 to 8 feet tall, with shining leaves and large, axillary flowers, white, with blue anthers. The shrub is found in the tropical valleys of the Himalayas from Nepal to Assam. The wood is white and hard, and weighs about 44 pounds to the cubic foot. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 132, and Hooker, Flora of British India, vol. 1, p. 178.*)

47654. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

Canudo de pito.

A tropical American ornamental shrub with panicles of whitish yellow flowers. The reedlike branches are used in Brazil for making smoking pipes. (Adapted from *Rodrigues, Hortus Fluminensis, p. 146.*)

47655. *CASSIA TORA* L. Cæsalpiniaceæ.

An annual shrub, common throughout the Tropics, the seeds of which have been recently used as an adulterant for coffee in Bombay, India.

47629 to 47830—Continued.

The aroma of the ground seeds is not unpleasant. The chemical analysis does not show any ingredients which are known to be harmful. (Adapted from *Poona Agricultural College Magazine*, vol. 9, p. 47.)

47656. CAUTLEYA LUTEA Royle. Zinziberaceæ.

(*Roscoeia elatior* Smith.)

A slender herbaceous plant, native to the temperate regions of the Himalayas, 12 to 18 inches in height, with narrow, sessile leaves and loose spikes of yellow flowers with red calyces. The globose capsules are bright red. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 208.)

47657. CELASTRUS PANICULATUS Willd. Celastraceæ. Bittersweet.

A climbing shrub of the Himalayan foothills, ascending to 4,000 feet. The seeds yield a deep-scarlet or yellow oil used medicinally as an external application. When subjected to destructive distillation, the seeds yield the oleum nigrum, an empyreumatic black oily fluid formerly employed in the treatment of beriberi. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 237.)

47658. CENTRANTHERA GRANDIFLORA Benth. Scrophulariaceæ.

A stiff, rough, yellow-flowered annual with narrow, rigid, sessile leaves about 2 inches long. The plant reaches a height of a foot or two and is a native of Sikkim, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 301.)

47659. CLEMATIS GOURIANA Roxb. Ranunculaceæ.

Clematis.

An extensive climber, found in the hilly districts of the western Himalayas and south to Ceylon, ascending to 3,000 feet. The leaves and stems abound in an acrid, poisonous principle which, when applied to the skin, causes vesication. The very small yellowish or greenish white flowers grow in dense panicles. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 369, and *Hooker, Flora of British India*, vol. 1, p. 4.)

47660. CLERODENDRUM INDICUM (L.) Druce. Verbenaceæ.

(*Clerodendron siphonanthus* R. Br.)

A large shrub with hollow herbaceous branches and whorls of 3 to 5 narrow leaves 6 to 9 inches long. The flowers, borne in loose terminal thyrsi, are white when first opening, gradually changing into cream color, and the calyces are red. The blue ovoid berries are supported by the enlarged, spreading calyces. This shrub is native to southeastern and southern India, where the roots and leaves are used by the natives medicinally. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 375, and *Brandis, Forest Flora of India*, p. 364.)

47661. COFFEA BENGALENSIS Roxb. Rubiaceæ.

This shrub, which is a close relative of the plant which furnishes the coffee of commerce, is a native of India and is remarkable for the number and beauty of its flowers. These flowers, which are large and white, are borne singly or in pairs at the ends of the branches. (Adapted from *Curtis's Botanical Magazine*, pl. 4917.)

47662. COMMELINA OBLIQUA Buch.-Ham. Commelinaceæ.

A tall, branched herb, common throughout the low moist regions of India, where the blue flowers appear chiefly during the rainy season.

47629 to 47830—Continued.

The root is said to be edible, and during times of scarcity the leaves and stems are used as greens. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 516, and Hooker, *Flora of British India*, vol. 6, p. 372.)

47663. COTONEASTER ACUMINATA Lindl. Malaceæ.

A deciduous shrub, native to the Himalayas of eastern India at altitudes of 4,500 to 10,000 feet. The white flowers are borne in compact cymes, and the hard white wood is used for making walking sticks. (Adapted from Brandis, *Forest Flora of India*, p. 209.)

47664. COTONEASTER FRIGIDA Wall. Malaceæ.

"Of the stronger growing Cotoneasters this is perhaps the best, for it grows into a very large bush, or sometimes a small tree, and rarely fails to fruit freely, the branches from and after late September being laden with large clusters of bright-red fruits. Moreover, it is more attractive when in flower than many of the Cotoneasters, the flowers being creamy white and produced in large heads. Although a deciduous species, the leaves are often retained until well into winter, and after a mild autumn it not infrequently happens that many leaves are left until January. The fruit also remains until well into the New Year if not troubled by birds. It is a Himalayan plant, and succeeds in a light and sunny position in good loamy soil." (*The Garden*, vol. 80, p. 555.)

47665. COTONEASTER ROTUNDIFOLIA Wall. Malaceæ.

One desirable feature of this Cotoneaster used as an ornamental plant is that the berries are less attractive to birds than those of any of the other kinds. This is a very important point, as some members of the genus are very quickly robbed of their beauty after the berries color. *Cotoneaster rotundifolia* is one of the Himalayan species, several of which run into each other by almost imperceptible gradations, so that, as might be expected, a certain amount of confusion attends their nomenclature. The true *Cotoneaster rotundifolia* is a beautiful shrub, usually forming a rather spreading bush 4 or 5 feet in height, clothed with small dark-green roundish leaves, many of which are retained throughout the winter unless the weather is particularly severe. The berries, which are about the size of peas, are very freely borne and of a deep-scarlet hue when ripe. (Adapted from *Journal of Horticulture and Home Farmer*, 3d ser., vol. 67, p. 599.)

**47666. CRACCA CANDIDA (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.)**

A large shrub, native to Burma and Bengal, with hairy leaflets and pods, and white flowers, about an inch long, in terminal racemes. The leaves are used to poison fish. (Adapted from Brandis, *Forest Flora of India*, p. 138.)

47667. CROTALARIA ALATA Buch.-Ham. Fabaceæ.

A suberect perennial undershrub, 1 to 2 feet high, with the stem and lower foliage covered with short silky pubescence. The pale-yellow flowers are borne in 2 to 3 flowered racemes. This shrub is a native of eastern India, where it ascends to 5,500 feet in the Himalayas. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 69.)

47629 to 47830—Continued.

47668. CROTALARIA TETRAGONA Roxb. Fabaceæ.

A stiff, very handsome shrub, often 6 to 8 feet in height, native to the lower altitudes of the Himalayas from Kumaon to Assam, India. The slender, silky branches and the long racemes of lemon-yellow flowers make this a very attractive shrub. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 78.)

47669. CRYPTOLEPIS ELEGANS Wall. Asclepiadaceæ.

A slender, yellow-flowered climber, with oblong or linear-oblong leaves up to 2½ inches long. The fragrant flowers appear in axillary and terminal cymes. The plant is a native of eastern and northeastern India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 6.)

47670. CYNOGLOSSUM WALLICHII Don. Boraginaceæ.

An erect, hairy, herbaceous plant, with ovate or lanceolate leaves and elongated racemes of very small bluish or purplish flowers. It is very common in the western part of the temperate Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 157.)

47671. DATURA FASTUOSA L. Solanaceæ.

An ornamental herbaceous annual, common throughout India and the East Indies, which varies in height from 2 to 6 feet. It has entire or deeply toothed leaves about 6 inches long and flowers 7 inches or more in length, varying in color from white to lavender or rose. Propagation is by cuttings. (Adapted from *The Garden*, vol. 46, p. 225.)

47672. DEERINGIA BACCATA (Retz.) Moq. Amaranthaceæ.
(*D. celosioides* R. Br.)

A smooth, somewhat woody climber from Australia, with large, ovate, thin, dark-green leaves, long spikes of greenish white flowers, and bright-red fruits about three-eighths of an inch in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 2717.)

47673. DICELLOSTYLES JUJUBIFOLIA (Griffith) Benth. Malvaceæ.
(*Kydia jujubifolia* Griffith.)

A tree, more or less hairy throughout, with ovate leaves about 3 inches long and white flowers 1½ inches in diameter, in panicles. It is a native of the eastern tropical Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 333.)

47674. DICENTRA THALICTRIFOLIA (Wall.) Hook. f. and Thoms. Papaveraceæ.

A slender, climbing plant with a perennial root, native to the temperate regions of the Himalayas. It has decompound leaves and yellow or purple flowers, up to an inch in length. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 121.)

47675. DICHROA FEBRIFUGA Lour. Hydrangeaceæ.

A tall shrub, abundant in the temperate Himalayas from 5,000 to 8,000 feet. It has narrow leaves 3 to 8 inches long, terminal panicles of blue or purplish flowers, and berries of an intense blue. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 406.)

47676. ELAEOCARPUS SIKKIMENSIS Masters. Elaeocarpaceæ.

A tree with elliptic-acuminate serrate leaves about 8 inches long, small inconspicuous flowers in erect racemes, and tubercled ellipsoid drupes 2

47629 to 47830—Continued.

inches long. It is a native of Sikkim, Ind'a. (Adapted from *Hooker, Flora of British India, vol. 1, p. 402.*)

47677. EMBELIA FLORIBUNDA Wall. Myrsinaceæ.

A large climbing shrub with narrow leaves over 8 inches long and large, much divided, axillary racemes of white flowers. It is a native of north-eastern India. (Adapted from *Hooker, Flora of British India, vol. 3, p. 514.*)

47678. ERAGROSTIS NUTANS (Retz.) Nees. Poaceæ.

Grass.

A tall annual grass with long narrow spikes which often assume a pinkish tinge when mature. In India, where it is native, it is usually met with in heavy soils and along the banks of streams and borders of rice fields. Though not a first-class fodder grass, cattle eat it readily when other better kinds have failed. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 255.*)

47679. ERIOBOTRYA PETIOLATA Hook. f. Malaceæ.

A stout tree with leathery leaves 6 to 9 inches long and white flowers, half an inch in diameter, appearing in panicles 3 to 6 inches long and broad. It is a native of Sikkim, India, and the eastern Himalayas, where it grows at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 370.*)

47680. ERYTHRINA ARBORESCENS Roxb. Fabaceæ.

A small tree, native to the outer Himalayas from the Ganges to Sikkim, India, bearing erect, axillary racemes of large bright-scarlet flowers. (Adapted from *Brandis, Forest Flora of India, p. 140.*)

47681. EURYA ACUMINATA DC. Theaceæ.

A shrub, 10 to 12 feet high, with oblong leathery leaves and white flowers which are either solitary or in fascicles. The wood is reddish white, soft, and close grained. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 302*, and *Brandis, Forest Flora of India, p. 24.*)

47682. EVODIA FRAXINIFOLIA (D. Don) Hook. f. Rutaceæ.

A small, densely leafy tree with bright-green compound leaves, 8 to 12 inches long, which when bruised, smell strongly like caraway. The white flowers are borne in axillary and terminal cymes; and the red fruits are about half an inch in diameter. In Sikkim, India, where this tree is native, the white soft wood is used for posts. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 305*, and *Hooker, Flora of British India, vol. 1, p. 490.*)

47683. EVODIA MELIAEFOLIA (Hance) Benth. Rutaceæ.

A small slender tree, native to Assam, India, with cream-colored flowers borne in hairy cymes about 8 inches broad. (Adapted from *Hooker, Flora of British India, vol. 1, p. 490.*)

47684. EXACUM TERES Wall. Gentianaceæ.

A tall herbaceous plant, up to 4 feet in height, with narrow leaves 3½ inches long and rather large blue flowers which are borne in long lax panicles. This plant is common in the tropical regions of the Himalayas, ascending to 5,000 feet. (Adapted from *Hooker, Flora of British India, vol. 4, p. 95.*)

47629 to 47830—Continued.

47685. *FICUS HOOKERI* Miquel. Moraceæ.

A rather rare tree of the Himalayas of Sikkim, India, where it is found at altitudes of 1,000 to 6,000 feet. The broadly elliptic leaves are 4 to 11 inches in length, and the numerous male flowers are scattered, while the galls and female flowers are practically alike. (Adapted from *Hooker, Flora of British India, vol. 5, p. 505.*)

47686. *FICUS NEMORALIS* Wall. Moraceæ.

A moderate-sized tree of the outer Himalayas of Bhutan and Assam, India, where it ascends to 7,000 feet. The leaves are cut off for cattle feed. The white, close-grained wood weighs 38 pounds per cubic foot. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 356.*)

47687. *FRAXINUS FLORIBUNDA* Wall. Oleaceæ.

Ash.

A large, deciduous tree of the Himalayas, from the Indus to Sikkim, India, at altitudes of 5,000 to 8,500 feet. From the trunk is obtained by incision a saccharine exudation, called manna, used as a substitute for the officinal manna. The sugar contained in this exudation, called mannite, differs from cane and grape sugar in not being readily fermentable. Like the officinal manna, it is used for its sweetening and slightly laxative properties. The wood is white with a light-red tinge. It is valuable for oars, plows, spinning wheels, etc. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 3, p. 442.*)

47688. *GOUANIA NAPAENSIS* Wall. Rhamnaceæ.

An unarmed climbing shrub, belonging to the buckthorn family; native to Nepal and Sikkim, India. It has alternate leaves, and the small greenish flowers are in axillary or terminal spikes. (Adapted from *Hooker, Flora of British India, vol. 1, p. 644.*)

47689. *GREWIA MULTIFLORA* Juss. Tiliaceæ.

A shrub or small tree of eastern and western India, ascending to 4,000 feet. The white wood gives out an exceedingly unpleasant odor when cut. It is extensively used in making cot frames, ax handles, oars, etc. The plant is also much used for making hedges, for which its close growth and evergreen leaves make it especially suitable. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 179.*)

47690. *GYNURA ANGULOSA* DC. Asteraceæ.

A succulent herbaceous plant, 3 to 10 feet or more in height, with large sessile acuminate stem leaves 6 to 12 inches long; the basal leaves are sometimes 2 feet long. The yellow or purplish flower heads are up to an inch in length. This plant is a native of the temperate regions of the Himalayas. (Adapted from *Hooker, Flora of British India, vol. 3, p. 334.*)

47691. *HIBISCUS PUNGENS* Roxb. Malvaceæ.

Mallow.

An erect, bristly annual or perennial, native to the tropical Himalayas, with roundish heart-shaped, deeply lobed leaves 5 to 8 inches long and yellow flowers with purple centers, 5 inches in diameter. (Adapted from *Hooker, Flora of British India, vol. 1, p. 341.*)

47692. *HOLARRHENA ANTIDYSENTERICA* (Roth) Wall. Apocynaceæ.

A small pale-barked tree, 20 to 30 feet high, native to the tropical Himalayas. The foliage is bright pea green, and the white flowers are

47629 to 47830—Continued.

up to $1\frac{1}{2}$ inches across. The wood is white, tinged with yellow or pink, easily worked, and is used for toys, combs, spoons, etc.; in Assam it is used for furniture. Under the name of *conessi*, the bark and leaves are used medicinally. (Adapted from *Brandis, Forest Flora of India*, p. 326.)

47693. HOLBOELLIA LATIFOLIA Wall. Lardizabalaceæ.

A vigorous, much-branched vine, native of India, bearing axillary racemes of delightfully fragrant green and violet flowers. The ovoid-oblong fruits are about 5 inches long, violet-rose on the outside, with a layer of white flesh just under the skin. This flesh is edible, tasting like the pulp of the granadilla, or passion fruit. (Adapted from *Revue Horticole*, vol. 62, p. 348.)

47694. HYDRANGEA ROBUSTA Hook. f. and Thoms. Hydrangeaceæ.

A small tree or spreading shrub, 8 to 15 feet high, with large ovate leaves up to 9 inches long and hairy corymbs of blue flowers. The white, close-grained wood is moderately hard and easily worked. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 310, and *Hooker, Flora of British India*, vol. 2, p. 404.)

47695. HYPERICUM PATULUM Thunb. Hypericaceæ. St.-John's-wort.

An ornamental, hardy, Japanese perennial shrub, from 1 to 3 feet in height, with red stems and branches. It has bright-green leaves and very large yellow flowers, about 2 inches across, borne in terminal, few-flowered cymes. (Adapted from *Curtis's Botanical Magazine*, pl. 5693.)

47696. HYPTIS SUAVEOLENS (L.) Poit. Menthaceæ.

A rigid annual of the mint family, which grows to a height of 2 to 3 feet, has a hairy stem, extremely variable leaves, and secund flower heads. It is a native of tropical America, although introduced into tropical Asia. In Brazil the flowers and leaves are used medicinally as an antispasmodic and as a remedy for gout. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 630, and *Correa, Flora do Brazil*, p. 104.)

47697. ILEX FRAGILIS Hook. f. Aquifoliaceæ.

Holly.

This holly, a native of the mountains of Sikkim and Bhutan, India, forms a small tree with bright deep-green leaves which are more membranous than any of the other Indian species. The fleshy, globular fruits are red. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 602.)

47698. ILEX INSIGNIS Hook. f. Aquifoliaceæ.

Holly.

A small shrub or tree with thick, grooved branches which are purplish when young; native to the Himalayas of Sikkim, India. The leaves are dark green, leathery, and pinnately lobed, with the lobes spine tipped and alternately raised and depressed. (Adapted from *The Gardeners' Chronicle*, 2d ser., vol. 14, p. 216.)

47699. ILEX INTRICATA Hook. f. Aquifoliaceæ.

Holly.

A low, rigid, straggling shrub which forms matted masses with interlaced woody branches. The leaves are bright green, thick, leathery, and spreading, and the fruits are globular and red. The shrub is a native of Sikkim and eastern Nepal, India, where it grows at altitudes of 10,000 to 11,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 602.)

47629 to 47830—Continued.

47700. *IMPERATA CYLINDRICA* (L.) Beauv. Poaceæ. Grass.

A small perennial grass inhabiting the plains and hills of central and western India, where, in April and May, the roadsides and fields become white with its silky heads. The natives use it as a source of fiber and also for thatching. The young succulent foliage which springs up after a fire is much relished by cattle. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 336.)

47701. *INULA EUPATORIODES* DC. Asteraceæ.

A shrubby composite from the eastern Himalayas, with narrow, leathery, irregularly toothed, sharp-pointed leaves and terminal corymbs of yellowish flower heads. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 295.)

47702. *KYDIA CALYCINA* Roxb. Malvaceæ.

A small tree or large bush common in subtropical forests of India and Burma, ascending to 2,000 feet. The inner bark yields a bast fiber used for coarse ropes, etc. The bark is mucilaginous, and is used to clarify the juice of the cane in manufacturing sugar. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 568.)

47703. *LAGERSTROEMIA PARVIFLORA* Roxb. Lythraceæ.

A large deciduous tree met with in the sub-Himalayan tract in Bengal, Assam, and central and southern India. The gum which exudes from the bark is said to be sweet and edible, and the bark yields a fiber used in the making of ropes. The bark is also used in dyeing skins black and for tanning. The grayish brown wood is very hard and tough, seasons well, and is fairly durable. It is largely employed for agricultural implements, boats, buggy shafts, etc. It is one of the trees on which the tussah silkworm is fed. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 584.)

47704. *LASIANTHUS BIERMANNI* King. Rubiaceæ.

A slender-branched shrub with grayish green leaves 5 to 7 inches in length and axillary cymes of rosy or pale lilac flowers. The fruits are one-fourth of an inch in diameter, roundish, and blue. This shrub is a native of Sikkim, India, and also of the Khasia Mountains. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 190.)

47705. *LAUROCERASUS ACUMINATA* (Wall.) Roemer. Amygdalaceæ.
(*Prunus acuminata* Hook f.)

A slender-branched tree, 30 to 40 feet high, with smooth, flat, narrow leaves 4 to 7 inches long and many-flowered racemes of yellowish white flowers. It is a native of temperate regions of the central and eastern Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 317.)

47706. *LIGUSTRUM CONFUSUM* Decaisne. Oleaceæ. Privet.

A small tree, sometimes attaining a height of 40 feet in Sikkim, India, where it is native. The leathery leaves are up to 3½ inches long and the white flowers appear in panicles from 1 to 5 inches in length. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 616.)

47707. *LOBELIA PYRAMIDALIS* Wall. Campanulaceæ. Lobelia.

A tall herbaceous plant, 2 to 7 feet in height, with narrow leaves 6 inches long and dense terminal racemes of purplish rose, sometimes nearly white, flowers. It is a native of the Himalayas of northern India. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 426.)

47629 to 47830—Continued.

47708. *LONICERA MACRANTHA* (D. Don) Spreng. Caprifoliaceæ.**Honeysuckle.**

A shrubby honeysuckle, from temperate parts of the Himalayas, with rather large white flowers which fade to yellow. It is closely allied to *L. japonica*. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 10.)

47709. *LONICERA TOMENTELLA* Hook. f. and Thoms. Caprifoliaceæ.**Honeysuckle.**

This white-flowered honeysuckle is a native of the interior valleys of the mountain region of northeastern India, where it forms a shrub 10 to 12 feet high. The leaves are dark dull green, and the paired flowers hang from the axils of the leaves. The blue-black berries are about the size of a pea. (Adapted from *Curtis's Botanical Magazine*, pl. 6496.)

47710. *LUCULIA GRATISSIMA* (Wall.) Sweet. Rubiaceæ.

A tree or a spreading shrub, native to the temperate Himalayas, where it attains a height of 10 to 16 feet. It is a very attractive ornamental, because of the gorgeous rounded mass of pink or rose-colored flowers. It is said to make an excellent table plant when grown in a pot and treated somewhat similarly to a gardenia. (Adapted from *American Gardening*, vol. 28, p. 22, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 4, p. 1918.)

47711. *MAESA CHISIA* D. Don. Myrsinaceæ.

An evergreen tree, up to 30 feet in height, or sometimes a shrub, native to the Himalayas from Nepal to Bhutan at altitudes of 2,000 to 6,000 feet. The white flowers appear in compound racemes. (Adapted from *Johnson's Gardeners' Dictionary*, p. 487, and *Hooker, Flora of British India*, vol. 3, p. 509.)

47712. *MAESA INDICA* (Roxb.) Wall. Myrsinaceæ.

An evergreen shrub or small tree, common throughout India at altitudes of 6,000 feet or less. The small, white berries are used as food in Nepal, and the leaves are used in Kanara to poison fish. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 107, and *Brandis, Forest Flora of India*, p. 283.)

47713. *MAESA MACROPHYLLA* Wall. Myrsinaceæ.

A large shrub or small tree, native to the eastern Himalayas. When the bark is cut a resinous substance exudes. The wood is light brown and moderately hard. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 107.)

47714 to 47718. *MAGNOLIA CAMPBELLII* Hook. f. and Thoms. Magnoliaceæ.**Magnolia.**

A beautiful, deciduous magnolia from the Himalayas, where it ascends to 8,000 feet above sea level. It reaches a height of 80 feet, has very dark bark, large elliptical dark-green leaves, and white to purple flowers 10 inches in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 6793.)

For illustrations of this tree and of a single flower, see Plates III and IV.

47714. Purple flowered.

47717. Light-red flowered.

47715. Pink flowered.

47718. Dark-red flowered.

47716. White flowered.



THE QUEEN OF MAGNOLIAS AS IT GROWS AT DARJILING, INDIA. (MAGNOLIA CAMPBELLII HOOK. F. AND THOMS., S. P. I. No. 47714.)

Campbell's magnolia, considered the handsomest of that whole genus of beautiful trees, grows 80 feet or more in height and makes, as this picture shows, a wonderful display with its mammoth flowers just before the leaves appear. It is native to the Himalayas, where it ascends to an altitude of 8,000 feet. It has been grown successfully in the milder sections of England and will probably prove hardy only in our Southern States. (Photographed by Joseph F. Rock, Darjiling, India, March 4, 1921; P22743FS.)



A SINGLE FLOWER OF CAMPBELL'S MAGNOLIA, MUCH REDUCED. (MAGNOLIA CAMPBELLII HOOK. F. AND THOMS., S. P. I. NO. 47714.)

The huge flowers of this gorgeous magnolia are from 10 to 14 inches across and range in color from pure white through dark red to purple. The flower here shown was 14 inches across, according to Mr. Rock. (Photographed by Joseph F. Rock, Darjiling, India, March 4, 1921; P22742FS.)

47629 to 47830—Continued.

47719. MAOUTIA PUYA (Hook.) Wedd. Urticaceæ.

A shrub, native to the tropical Himalayas and distributed throughout the Straits Settlements and Japan. It is not cultivated, but from the bark is obtained a fiber which is much used for fishing nets, game bags, etc. The dark-green, serrate leaves have silvery lower surfaces. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 177.)

47720. MEIBOMIA CEPHALOTES (Roxb.) Kuntze. Fabaceæ.

(*Desmodium cephalotes* Wall.)

A tall shrub, with densely silky, acutely angled, zigzag branches and dense umbels of deep-red flowers. It is native to the eastern Himalayas. The Santals of Bengal eat the pods. Cattle and goats are said to be fond of the leaves. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 81, and Hooker, *Flora of British India*, vol. 2, p. 161.)

47721. MEIBOMIA FLORIBUNDA (D. Don) Kuntze. Fabaceæ.

(*Desmodium floribundum* Don.)

A woody, densely pubescent Himalayan plant with very copious axillary and terminal racemes of red flowers. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 167.)

Received as *Desmodium sambuense*, which is now referred to *Meibomia floribunda*.

47722. MEIBOMIA GYROIDES (DC.) Kuntze. Fabaceæ.

(*Desmodium gyroides* DC.)

A shrubby plant, 8 to 10 feet in height, with obtuse, pubescent leaves and axillary and terminal racemes of red flowers. It is a native of the tropical regions of the central and eastern Himalayas. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 175.)

47723. MEIBOMIA HETEROCARPA (L.) Kuntze. Fabaceæ.

(*Desmodium polycarpum* DC.)

An erect or suberect undershrub found throughout the Himalayas and in Burma. All of the bushy species of this genus are said to contain good fibers used in some cases for paper making. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 83.)

47724. MEIBOMIA PULCHELLA (L.) Kuntze. Fabaceæ.

(*Desmodium pulchellum* Benth.)

An erect pubescent shrub, with trifoliolate leaves and red flowers in spikelike axillary and terminal racemes. It is a native of southern India, Bengal, and Burma. (Adapted from Brandis, *Forest Flora of India*, p. 145.)

47725. MEIBOMIA SEQUAX (Wall.) Kuntze. Fabaceæ.

(*Desmodium sequax* Wall.)

A shrub, 2 to 20 feet in height, with the branches clothed with dense gray or brown pubescence, and with red flowers in copious racemes. It is a native of the Himalayas from Simla and Kumaon to Sikkim, India. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 170.)

47726. MEIBOMIA TILIAEFOLIA (D. Don) Kuntze. Fabaceæ.

(*Desmodium tiliaefolium* Don.)

A large deciduous shrub of the Himalayas, from the bark of which is obtained an excellent fiber used extensively in rope making and also in

47629 to 47830—Continued.

paper manufacture. The roots are used medicinally in bilious complaints, and the leaves are used as fodder. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 83.)

47727. MEIBOMIA TRIQUETRA (L.) Kuntze. Fabaceæ.
(*Desmodium triquetrum* DC.)

A shrub with triangular branches, stiff leathery leaflets, and very long, axillary and terminal racemes of red flowers. It is found in moist places in eastern and southern India, and also in China and the Philippines. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 163.)

47728. MELOTHRIA MADERASPATANA (L.) Cogn. Cucurbitaceæ.

A rough, climbing cucurbitaceous plant with 3 to 7 angled leaves, small yellow flowers, and bright-red fruits up to half an inch in diameter. The leaves are used medicinally as a gentle aperient, and a decoction of the seeds is used as a sudorific. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 287, and *Hooker, Flora of British India*, vol. 2, p. 623.)

Received as *Mukia scabrella*, which is now referred to this species.

47729. MELOTHRIA ODORATA Hook. f. and Thoms. Cucurbitaceæ.

A climbing herbaceous plant with leaves more or less heart shaped and white axillary flowers. It is native to East Bengal and the northwestern Himalayas, ascending to 7,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 626.)

47730. MICHELIA CATHCARTII Hook. f. and Thoms. Magnoliaceæ.

A lofty tree, native to the Himalayas of Sikkim, India, at altitudes ranging from 5,000 to 6,000 feet. The oblong leaves are pale and thin, and the white flowers are an inch in diameter. The sapwood is white and the heartwood dark olive-brown; used for planking. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 241.)

47731. MICHELIA EXCELSA Blume. Magnoliaceæ.

A tall deciduous tree, with oblong acute leaves and silky flowers 4 to 5 inches in diameter. It is a native of the temperate Himalayas at altitudes of 5,000 to 8,000 feet. The olive-brown, glossy heartwood is used for furniture and for building purposes. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 243, and *Hooker, Flora of British India*, vol. 1, p. 43.)

47732. MICHELIA LANUGINOSA Wall. Magnoliaceæ.

A Himalayan tree of variable height, whose leaves are white and fuzzy beneath and whose white flowers are 3 to 4 inches in diameter. In Sikkim it forms a large bush, flowering in autumn. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

47733. MICROGLOSSA ALBESCENS (DC.) Benth. Asteraceæ.

An erect, slender, shrubby composite with narrow sharp-pointed leaves with whitish lower surfaces. Originally a native of temperate regions of the Himalayas, it is now cultivated in China and also in southern Europe. It is very ornamental, bearing lilac flowers in large corymbs often 8 inches in diameter. (Adapted from *Revue Horticole*, vol. 79, p. 522, and *Hooker, Flora of British India*, vol. 3, p. 257.)

47629 to 47830—Continued.

47734. *MIMOSA RUBICAULIS* Lam. Mimosaceæ.

A large, straggling, prickly shrub found throughout the greater part of India, ascending to 5,000 feet in the western Himalayas. The leaves, seeds, pods, and powdered roots are used by the natives medicinally. It is said to be a valuable hedge plant. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 249.)

47735. *MISCANTHUS NEPALENSIS* (Trin.) Hack. Poaceæ. Grass.

A tall, perennial, ornamental grass from the temperate regions of the Himalayas. It grows from 3 to 6 feet high and has many densely crowded flower spikes with purplish or golden-yellow, shining spikelets. (Adapted from Hooker, *Flora of British India*, vol. 7, p. 107.)

47736. *MUCUNA MACROCARPA* Wall. Fabaceæ.

A woody, purple-flowered climbing plant from the Himalayas of north-eastern India, where it grows at altitudes of 1,000 to 6,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 186.)

47737. *MUSSAENDA INCANA* Wall. Rubiaceæ.

An erect herbaceous plant, 2 to 3 feet high, covered with soft, shining hairs. The stiff, ovate leaves are 5 to 6 inches long and the leafy, white calyx lobe is pubescent. The plant is a native of the tropical Himalayas. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 87.)

47738. *MUSSAENDA MACROPHYLLA* Wall. Rubiaceæ.

A large shrub, native to the tropical Himalayas, with stout branches, slightly hairy leaves up to 10 inches in length, and cymes of flowers with orange-lobed corollas and white-lobed calyces. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 89.)

47739. *NEILLIA THYRSIFLORA* D. Don. Rosaceæ.

A sparingly branched rosaceous shrub, about 3 feet in height, with deeply 3-lobed dentate leaves and terminal thyrseoid racemes of white flowers which appear at the beginning of autumn. It comes originally from the mountains of Nepal, India. (Adapted from *Revue Horticole*, vol. 60, p. 415.)

47740. *NOTOCHAETE HAMOSA* Benth. Menthaceæ.

An erect, branched herb, 2 feet and more in height, with ovate acuminate leaves 3 to 5 inches long and dense globular whorls of purple flowers. It is a native of the Himalayas of northeastern India. (Adapted from Hooker's *Icones Plantarum*, vol. 13, pl. 1217.)

47741. *NYSSA SESSILIFLORA* Hook. f. and Thoms. Cornaceæ.

A large tree, found in the forests of the Himalayas of Sikkim, India. The soft, gray, even-grained wood is used for house building and other purposes. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 5, p. 438.)

47742. *OLEA GAMBLEI* C. B. Clarke. Oleaceæ.

A wild relative of the cultivated olive, from Sikkim, India, where it grows in the Himalayas. The leathery leaves are oblong and acuminate, and the fruit is sometimes nearly an inch long. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 613.)

47629 to 47830—Continued.

47743. *OPHIOPOGON INTERMEDIUS* D. Don. Liliaceæ.

A hardy perennial, indigenous to Ceylon, with grasslike leaves and white flowers. It reaches a height of about a foot, and is suited to moist, shady places. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 393.)

47744. *OSBECKIA NEPALENSIS* Hook. Melastomaceæ.

A handsome plant, native to the Himalayas, with a rough, erect stem 1½ feet high, opposite, lanceolate, rigid leaves, and large purplish rose flowers in terminal and axillary panicles or corymbs. (Adapted from *Hooker, Exotic Flora*, vol. 1, pl. 31.)

47745. *OSBECKIA NUTANS* Wall. Melastomaceæ.

A woody, branching, small shrub with narrow leaves and small clusters of mauve-purple flowers. It is a native of the subtropical regions of the Himalayas from Sikkim, India, eastward. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 521.)

47746. *OSBECKIA ROSTRATA* D. Don. Melastomaceæ.

An erect, unbranched plant with broadly lanceolate leaves 3 to 8 inches long and terminal corymbs of rose-purple flowers. It is a native of swampy places at the foot of the Himalayas from Nepal to Burma. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 517.)

47747. *OSTODES PANICULATA* Blume. Euphorbiaceæ.

A large evergreen tree, native to the forests of Sikkim, India. It yields a gum which is used as sizing in paper manufacture. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 654.)

47748. *OXYSPORA PANICULATA* (D. Don) DC. Melastomaceæ.

A large spreading shrub, with drooping branches terminated by large, lax, almost naked, panicles of rose-purple flowers. The opposite leaves are ovate-acuminate and 4 to 5 inches in length, rarely longer. This shrub is a native of the subtropical and tropical Himalayas from Nepal to Bhutan. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 525.)

47749. *PAVETTA INDICA* L. Rubiaceæ.

Pawatta.

A very variable bush or small tree, common throughout most of India, ascending to 4,000 feet in Gurhwal. The powdered root is used as a laxative in native medicine, and the fruit, a 2-seeded berry, is picked and eaten in Madras. The white flowers, which occur in broad flat corymbs, are said to be used as food by the hill people of Matheran. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 114, and *Brandis, Forest Flora of India*, p. 275.)

47750. *PENTAGONIA PHYSALODES* (L.) Hiern. Solanaceæ.(*Nicandra physaloides* Gaertn.)

A very attractive annual, 2 or 3 feet high, with ovate-oblong, unevenly cut leaves and rather large, bell-shaped, lavender flowers. It is a native of Peru and Chile. (Adapted from *Curtis's Botanical Magazine*, pl. 2458.)

47751. *PHYLLANTHUS EMBLICA* L. Euphorbiaceæ.

Nelli.

"A moderate-sized deciduous tree found throughout the tropical forests of India, either wild or planted. It has gray bark and feathery light-green foliage and yields a gum of which little is known. The trunk is often crooked or gnarled. The hard, close-grained wood is used for agri-

47629 to 47830—Continued.

cultural implements, and is much valued for its durability. The fruit, a fleshy berry two-thirds of an inch in diameter, is the emblic myrobalan used in medicine and for dyeing and tanning; it is also pickled and eaten." (*Brandis, Forest Flora of India, p. 454.*)

47752. *PHYLLANTHUS RETICULATUS* Poir. Euphorbiaceæ.

A large, often scandent shrub, common throughout tropical India, especially on moist ground. In Madras the root is used as a dye for producing a red color, and the leaves are employed as a diuretic in Sind. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 223.*)

47753. *PHYLLANTHUS WIGHTIANUS* Muell. Arg. Euphorbiaceæ.

A shrubby plant with close-set, drooping leaves which are pale green when dry, and solitary axillary flowers. It is a native of the Nilghiri and Pulney Hills, India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 5, p. 303.*)

Received as *Phyllanthus obliquum* Wall., which is now referred to this species.

47754. *PICEA SMITHIANA* (Wall.) Boiss. Pinaceæ.
(*P. morinda* Link.)

A shapely evergreen, native to Nepal, India, sometimes 150 feet tall. It has widespreading branches, bright or dark-green crowded leaves, purple flowers (pistillate), and dark-brown, glossy cones. It is hardy as far north as New York. (Adapted from *The Gardeners' Chronicle, 3d ser., vol. 38, p. 395*, and *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2618.*)

47755. *PIERIS OVALIFOLIA* (Wall.) D. Don. Ericaceæ.
(*Andromeda ovalifolia* Wall.)

A shrub or small tree with ovate or somewhat oblong leathery leaves 3 to 6 inches long, and racemes of white or bluish or sometimes flesh-colored flowers. Because of a poisonous principle the young leaves and buds are a useful insecticide. It is a native of the temperate parts of the Himalayas. (Adapted from *Brandis, Forest Flora of India, p. 280*, and *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 229.*)

47756. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

A shrub with alternate trifoliolate leaves and short hairy racemes of large bright-yellow flowers. It is a native of the Himalayas, growing in shady woods at altitudes of 7,000 to 9,000 feet. In England grown against walls it has proved hardy. (Adapted from *Brandis, Forest Flora of India, p. 132.*)

47757. *PITTOSPORUM FLORIBUNDUM* Wight and Arn. Pittosporaceæ.

A handsome tree with a short straight trunk and spreading branches, numerous yellowish flowers in terminal panicles, and light-colored strong tough wood. The tree yields an aromatic, yellow resin or oleoresin having very tenacious properties. It is a native of the outer Himalayas, ascending to 3,500 feet. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 283*, and *Brandis, Forest Flora of India, p. 19.*)

47629 to 47830—Continued.

47758. PLECTRANTHUS COETSA Buch.-Ham. Menthaceæ.

A tall, erect, strong-smelling shrubby ornamental plant of the mint family, with very numerous cymes of lavender-blue flowers. It is a native of the temperate regions of the Himalayas at altitudes of 3,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 619.)

47759. POGOSTEMON PARVIFLORUS Benth. Menthaceæ.

A small bush found in the subtropical portions of the Himalayas. The entire plant has a strong, black-currant odor, and the bruised leaves are used as a poultice for wounds. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 306.)

47760. POLYGONUM CHINENSE L. Polygonaceæ.

A rambling or erect shrub, up to 5 feet in height, with very variable foliage and white, pink, or purplish flower heads in corymbs or panicles. It is a native of the subtropical and temperate Himalayas, and is distributed throughout the East Indies and tropical Asia. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 44.)

47761. PORANA RACEMOSA Roxb. Convolvulaceæ.

Snow creeper.

One of the most beautiful of Himalayan plants, occurring in dense, not lofty, masses, climbing over other plants in the jungle, with the closely massed, dazzling white flowers resembling patches of snow. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 327.)

47762. POTENTILLA FRUTICOSA L. Rosaceæ.

A much-branched, rigid, robust shrub, native to the temperate and sub-alpine parts of the Himalayas, ascending to 16,000 feet. The fragrant leaves when dried are used in the upper parts of the Chenab basin as a substitute for tea. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 332.)

47763. POTENTILLA MOONIANA Wight. Rosaceæ.

A tall, erect-branched, leafy plant from Ceylon and the lower altitudes of northern India. The narrow leaves are 5 to 10 inches long, and the flowers are in panicles or corymbs. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 349.)

47764. PRATIA MONTANA (Reinw.) Hassk. Campanulaceæ.

A tall, rambling, herbaceous plant with long branches, narrow leaves about 4 inches long, and axillary green flowers marked with purple. It has globular black-purple berries. This plant is a native of the temperate parts of the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 423.)

47765. PRIOTROPIS CYTISOIDES (Roxb.) Wight and Arn. Fabaceæ.

A low shrub with slender, glabrous branches, trifoliate leaves, and copious racemes of pale-yellow flowers. It is a native of the tropical parts of the eastern Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 65.)

47629 to 47830—Continued.

47766. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ. Himalayan cherry.
(*P. puddum* Roxb.)

A moderate-sized or sometimes large tree, native to northeastern India, known as the "wild cherry of the Himalayas." The rose-red or white flowers give the tree a brilliant appearance in the late fall, and the small, oblong fruits, with scanty flesh, are little used as food. The wood is reddish and beautifully mottled, and is used for walking sticks, furniture, etc. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 350.)

47767. *PRUNUS NAPAULENSIS* (Seringe) Steud. Amygdalaceæ.

Nepal cherry.

A small tree with narrow acuminate leaves 4 to 6 inches long and axillary racemes of white flowers. The drupes are about twice the size of a large pea and acid. This tree is a native of the temperate Himalayas at altitudes of 4,000 to 10,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 316.)

47768. *PSYCHOTRIA ERRATICA* Hook. f. Rubiaceæ.

A shrubby plant, native to Nepal and Sikkim, India, where it ascends from 4,000 to 6,000 feet above the sea. The rather thin leaves are elliptic or lance shaped and up to 7 inches in length, and the very small fruits are red and yellowish. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 168.)

47769. *RANDIA ULIGINOSA* (Retz.) Poir. Rubiaceæ.

A small deciduous tree of eastern, central, and southern India, with shining leaves and large, showy, white or cream-colored flowers. The succulent fruit is used in dyeing as an intensifier, and also in medicine as an astringent. Boiled or roasted, it is often eaten by the natives as a vegetable. The leaves are boiled and eaten as greens. When unripe, the fruit is used to poison fish. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 391, and Brandis, *Forest Flora of India*, p. 273.)

47770. *RHAMNUS NAPAULENSIS* (Wall.) M. Laws. Rhamnaceæ.

A rambling or somewhat erect shrub with long slender branches, dark-green shining leaves, small green flowers, and blackish red fruits. It is a native of the Himalayas of northeastern India. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 640.)

47771. *RHODODENDRON ARBOREUM* J. E. Smith. Ericaceæ.

This Himalayan rhododendron is variable both in its foliage and in the color of its flowers. In one form the leaves are silvery on the lower surface, while in another they are covered with a brownish red down. The bell-shaped flowers, borne in dense trusses, vary from deep crimson to pure white. The tree sometimes reaches a height of 35 feet, with a trunk 4 feet in circumference. (Adapted from *Flora and Sylva*, vol. 3, p. 34.)

47772. *RHODODENDRON CILIATUM* Hook. f. Ericaceæ.

A somewhat dwarf growing Himalayan rhododendron, bearing many small, loose trusses of pinkish white flowers less than 3 inches wide. It rarely exceeds 6 feet in height. (Adapted from *Flora and Sylva*, vol. 3, p. 35.)

47629 to 47830—Continued.

47773. RHODODENDRON DALHOUSIAE Hook. f. Ericaceæ.

This is said to be the finest rhododendron from northeastern India, chiefly because of the great size and beauty of the fragrant flowers which resemble those of a large lily. It is a straggling shrub, 6 to 8 feet high, with smooth dark-green leaves. The flowers, which grow in terminal clusters of three to five, are about $4\frac{1}{2}$ inches across. (Adapted from *Curtis's Botanical Magazine*, pl. 4718.)

47774. RHODODENDRON FALCONERI Hook. f. Ericaceæ.

This shrub or tree, which attains a height of 30 feet, is a native of northeastern India. Because of the large deep-green leaves, sometimes a foot long, and the whitish, densely clustered flowers, this is a very fine ornamental. (Adapted from *Curtis's Botanical Magazine*, pl. 4924.)

47775. RHODODENDRON GRANDE Wight. Ericaceæ.

A handsome shrub about 15 feet high, native to the Himalayas. It bears numerous loose trusses of bell-shaped flowers about $2\frac{1}{2}$ inches in diameter. These are at first suffused with a faint rose tint which later changes to white. (Adapted from *Flora and Sylva*, vol. 3, p. 36.)

47776. RHODODENDRON MADDENI Hook. f. Ericaceæ.

An ornamental Himalayan shrub 6 to 8 feet high. The dark-green leaves are from 4 to 7 inches long, with deep-red petioles. The large, delicate, fragrant flowers, white tinged with rose, occur in threes at the ends of the branches. (Adapted from *Curtis's Botanical Magazine*, pl. 4805.)

47777. RHODODENDRON ROYLEI Hook. f. Ericaceæ.

(*R. cinnabarinum* Hook. f.)

An evergreen shrub, 6 to 10 feet high, with smooth grayish green leaves, and very attractive flowers. Ordinarily the flowers, produced in terminal heads of 5 to 8, are of a dull cinnabar red. In some forms the corolla is orange-red outside and yellowish within. This shrub is a native of Sikkim and Bhutan, India. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 351.)

47778. RHUS SUCCEDANEA L. Anacardiaceæ.

Sumach.

A tree about 30 feet in height with a short trunk 3 feet in circumference and compound leaves up to a foot in length. The greenish yellow flowers appear on numerous lateral panicles, and the yellow or light-brown drupes inclose large oily seeds. In Japan a beautiful white wax, suitable for making candles, is prepared from the seeds. The tree also yields a small supply of varnish. It is a native of many parts of the Himalayas at altitudes ranging from 2,000 to 8,000 feet. (Adapted from *Brandis, Forest Flora of India*, p. 121.)

Received as *Rhus acuminata*, which is now referred to this species.

47779. ROSA MACROPHYLLA Lindl. Rosaceæ.

Rose.

This rose, a native of the northwestern Himalayas, ascending to 10,000 feet, is erect, often unarmed, and has large red flowers, $1\frac{1}{2}$ to 2 inches long, either solitary or in terminal corymbs. The large, soft, turbinate fruit is an inch long, and is eaten. This rose is hardy in England. (Adapted from *Brandis, Forest Flora of India*, p. 203.)

47629 to 47830—Continued.

47780. *RUBIA CORDIFOLIA* L. Rubiaceæ. **Madder.**

A climbing, woody, white-barked perennial, found throughout the hilly districts of India, with whorls of prickly leaves and purplish black fruits about one-third of an inch in diameter. The fruits and roots are used in native medicine, chiefly as an astringent. (Adapted from *Kirtikar, Indian Medicinal Plants, pt. 1, p. 663.*)

47781. *RUBUS ELLIPTICUS* J. E. Smith. Rosaceæ. **Raspberry.**

A tall suberect bush, native to the temperate and subtropical Himalayas. The fruit is yellow and has the flavor of a raspberry. In the Himalayas it is commonly eaten either raw or made into a preserve and is said to be one of the best wild fruits of India. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 581.*)

47782. *RUBUS MOLUCCANUS* L. Rosaceæ.

An East Indian *Rubus* with ornamental and very variable foliage. It is a climber with fuzzy stems and heart-shaped, 5-lobed, deep-green leaves whose lower surfaces are thickly covered with cream-colored down. (Adapted from *The Gardeners' Chronicle, 3d ser., vol. 33, p. 308.*)

47783. *RYTILIX GRANULARIS* (L.) Skeels. Poaceæ. **Grass.**
(*Manisuris granularis* L.)

An annual, erect, much-branched grass found throughout the hotter parts of India. The stem is from 1 to 2 feet or more in length, and it and the flaccid flat leaves are softly hairy. (Adapted from *Hooker, Flora of British India, vol. 7, p. 159.*)

47784. *SAURAUJA NAPAULENSIS* DC. Dilleniaceæ.

A large shrub or tree, native to the Himalayas from Bhutan to Gurhwal, India, at altitudes of 2,400 to 7,000 feet. The narrow hairy leaves are 7 to 14 inches long, the pink flowers occur in axillary panicles, and the green mealy sweet fruit is edible. (Adapted from *Brandis, Forest Flora of India, p. 25*, and *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 3, p. 479.*)

47785. *SAUROPUS ALBICANS* Blume. Euphorbiaceæ.

An erect, somewhat shrubby plant with terete green branches, small greenish red flowers, and small fleshy fruits. It is a native of the hot valleys of the Himalayas of Sikkim, India, and is distributed southward to Ceylon and eastward to the Philippines. (Adapted from *Hooker, Flora of British India, vol. 5, p. 332.*)

47786. *SAUSSUREA DELTOIDES* (DC.) C. B. Clarke. Asteraceæ.

A tall composite, 4 to 8 feet in height, having large leaves with cottony lower surfaces. The extremely variable heads are often tipped with purple and the corollas are white. It is a native of the central and eastern Himalayas, growing at altitudes of 6,000 to 11,500 feet. (Adapted from *Hooker, Flora of British India, vol. 3, p. 374.*)

47787. *SCHEFFLERA IMPRESSA* (C. B. Clarke) Harms. Araliaceæ.
(*Heptapleurum impressum* C. B. Clarke.)

A handsome tree of the northeastern Himalayas at altitudes of 6,000 to 11,000 feet, where it commonly attains a height of 60 feet, and is easily recognized by its woolly leaves. The thick brown bark yields a copious gum and the wood is white or gray and soft. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 222.*)

47629 to 47830—Continued.

47788. *SCHEFFLERA VENULOSA* (Wight and Arn.) Harms. Araliaceæ.
(*Heptapleurum venulosum* Seem.)

A small glabrous tree or climbing shrub frequent in the mixed forests throughout tropical and subtropical India. The light-brown soft wood is used as lumber. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 4, p. 222.)

47789. *SCHIMA WALLICHII* (DC.) Choisy. Theaceæ.

A large evergreen tree, 80 to 100 feet in height, native to the eastern Himalayas at altitudes of 2,000 to 5,000 feet. The wood, which is rough, red, close grained, and moderately hard, is used for many purposes, chiefly building. The bark causes itching of the skin. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 485.)

47790. *SELINUM TENUIFOLIUM* Wall. Apiaceæ.

A highly ornamental Himalayan plant with very finely divided fernlike leaves. When the plant is isolated on a lawn and not allowed to flower, the effect is very striking because of the fresh green color of the leaves. It is perfectly hardy in England. (Adapted from *The Garden*, vol. 38, p. 221.)

47791. *SENECIO SCANDENS* Buch.-Ham. Asteraceæ.

A beautiful autumn-flowering senecio from the Himalayas, with a woody stem and climbing habit. The yellow flowers are in few-flowered loose paniclelike clusters. Because of its rustic beauty and its habit of flowering in October, this plant is a very desirable ornamental. (Adapted from *Revue Horticole*, vol. 81, p. 407.)

47792. *SENECIO UNCINELLUS* DC. Asteraceæ.
(*S. densiflorus* Wall.)

A tall, shrubby plant, native to the central and eastern Himalayas at altitudes of 4,000 to 6,000 feet. In the district of Huzara the leaves are applied to boils. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 500.)

47793. *SHUTERIA HIRSUTA* Baker. Fabaceæ.

A densely hairy, trifoliolate climber with lax racemes of purple flowers and recurved hairy pods. It is a native of Sikkim and Khasia, India, where it grows at altitudes of 3,000 to 5,000 feet. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 182.)

47794. *SIDA ACUTA* Burm. f. Malvaceæ.

A shrubby perennial distributed generally throughout the hotter portions of India, from whose stems a good fiber is obtained. From the long cylindrical root is obtained by decoction a remedy for stomach troubles. The expressed juice of the root is also employed as a vermifuge. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 2, p. 679.)

Received as *S. carpinifolia*, which is now referred to this earlier species.

47795. *SKIMMIA LAUREOLA* (DC.) Sieb. and Zucc. Rutaceæ.

An evergreen, strongly aromatic shrub, found throughout the temperate Himalayas at altitudes ranging from 6,000 to 10,000 feet. The white flowers are crowded into terminal panicles, and the red fleshy fruits are ellipsoid and up to three-fourths of an inch in length. The

47629 to 47830—Continued.

timber is used to make hoe and ax handles. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 244, and *Hooker, Flora of British India*, vol. 1, p. 499.)

47796. *SMILAX ASPERICAULIS* Wall. Smilacaceæ. Smilax.

A climbing shrub having roughish stems, thin leaves with rounded or clawed tips, many-flowered umbels, and globular berries nearly half an inch in diameter. It is a native of the Sikkim Himalayas, India. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 306.)

47797. *SOLANUM CRASSIPETALUM* Wall. Solanaceæ.

A Himalayan shrub, 2 to 9 feet in height, with narrow leaves acute at both ends. In Sikkim the leaves are cooked and eaten. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 232.)

47798. *SOLANUM KHASIANUM* C. B. Clarke. Solanaceæ.

A stout plant with a stem densely yellow hirsute, armed with straight prickles two-thirds of an inch long. The deeply lobed leaves are 7 inches in length, and the berries are an inch in diameter. This plant is a native of the Khasia Mountains, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 234.)

47799. *SOLANUM MACRODON* Wall. Solanaceæ.

An erect shrubby plant covered with bristly glistening hairs, with leaves 2 to 6 inches in length and purple-rose or nearly white flowers. It is a native of the temperate regions of the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 232.)

47800. *SOLANUM VERBASCIFOLIUM* L. Solanaceæ.

A shrub or small tree frequently encountered throughout tropical and subtropical India. In the southern part of India it is cultivated for its fruit, which is small and is eaten in curries. The wood is light yellow and soft. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 273.)

47801. *SPIRAEA BELLA* Sims. Rosaceæ. Spirea.

A low shrub with oval, acute, finely serrate leaves with whitish lower surfaces and terminal panicles of bright-purple flowers. It is a native of Nepal, and appears to be hardy in England. (Adapted from *Curtis's Botanical Magazine*, pl. 2426.)

47802. *SPIRAEA MICRANTHA* Hook. f. Rosaceæ. Spirea.

A shrub found on the temperate slopes of the Himalayas in north-eastern India at altitudes of 6,000 to 10,000 feet. It is closely related to *Spiraea bella*, but is more lax in habit. The ovate-lanceolate leaves are sometimes 7 inches long, and the pale-pink flowers, often one-fourth of an inch across, are borne in long, spreading panicles. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 325.)

47803. *SPOROBOLUS INDICUS* (L.) R. Br. Poaceæ. Grass.

A grass found on the plains of India and generally distributed over the tropical and subtropical parts of the world. It is considered to be a good fodder grass, especially when young. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 341.)

47629 to 47830—Continued.

47804. STEPHANIA ROTUNDA Lour. Menispermaceæ.

A large climber, native to the northwestern Himalayas, with tuberous roots, large peltate leaves up to 7 inches in width, and axillary umbels of yellow flowers. (Adapted from *Brandis, Forest Flora of India*, p. 571.)

47805. STIZOLOBIUM PRURITUM BIFLORUM (Trimen) Piper. Fabaceæ.

This 2-flowered variety of *Stizolobium pruritus* has leaflets which are very silky beneath and sickle-shaped pods, about 2 inches long, covered with red, erect, stinging hairs. It is a native of Ceylon. (Adapted from *Piper, Proceedings of the Biological Society of Washington*, vol. 30, p. 60.)

47806. STYRAX SERRULATUM Rozb. Styraceæ.

A bush or small tree common in southern Japan, where it is much cultivated on account of its ornamental appearance. The leaves are very variable in size and form, usually elliptic or narrower; and the white flowers, three-fourths of an inch in diameter, are in drooping cymes. This plant is also found in the Himalayas of northeastern and eastern India. (Adapted from *Curtis's Botanical Magazine*, pl. 5950.)

47807. SWERTIA BIMACULATA (Sieb. and Zucc.) Hook. f. and Thoms. Gentianaceæ.

An erect annual, 2 to 6 feet in height, with numerous white or yellowish green flowers in panicles. This plant is a native of the eastern Himalayas at altitudes of 5,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 123.)

47808. SWERTIA PURPURASCENS (D. Don) Wall. Gentianaceæ.

This species differs from *Swertia bimaculata* in having purple flowers with reflexed corolla lobes. It grows on the western Himalayas at altitudes ranging from 5,000 to 12,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 121.)

47809. SWERTIA TONGLUENSIS Burkill. Gentianaceæ.

An erect herbaceous perennial, 10 inches or more in height, with ovate, sessile leaves and panicles of inconspicuous greenish flowers. It is a native of Darjiling and Sikkim, India. (Adapted from *Kirtikar, Indian Medicinal Plants*, vol. 2, p. 851, and *Journal of the Asiatic Society of Bengal*, vol. 2, p. 319.)

47810. TAMARIX DIOICA Roxb. Tamaricaceæ.

A gregarious shrub or small tree found near rivers and on the sea-coast throughout India, where it is often planted for ornament on account of its spikes of pink flowers and attractive foliage. A peculiar bittersweet gum, or manna, is obtained from this plant, which is used in some places for making confections. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 410, and *Hooker, Flora of British India*, vol. 1, p. 249.)

47811. TETRASTIGMA BRACTEOLATUM (Wall.) Planch. Vitaceæ.
(*Vitis bracteolata* Wall.)

A slender-branched sarmentose shrub with smooth stems, cymes of very small green flowers, and dry 2 to 4 seeded fruits. It is a native of Bhutan and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 654.)

47629 to 47830—Continued.

47812. THEMEDA TRIANDRA Forsk. Poaceæ.

Grass.

(Anthistiria imberbis Retz.)

A tall perennial grass with the spikes in globose or fan-shaped fascicles and rather rigid, very narrow leaves 3 to 10 inches long. It reaches a height of 1 to 6 feet, is a native of the hotter and drier parts of India, and is distributed throughout the warmer regions of the Old World. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 211.)

47813. TODDALIA ASIATICA (L.) Lam. Rutaceæ.

(T. aculeata Pers.)

A rambling shrub, native to the subtropical Himalayas. This is perhaps one of the most valuable of Indian medicinal plants. The unripe fruit and root are mixed with oil to form a stimulant liniment for rheumatism; the fresh leaves are eaten raw for pains in the intestines, and the fresh bark of the root is considered an excellent febrifuge. The ripe berries are fully as pungent as black pepper, and they are pickled by the natives with excellent results. Upon distillation the leaves yield a pale yellowish green oil having the odor of citron peel and a bitter aromatic taste. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 58.)

47814. TRACHYCARPUS MARTIANA (Wall.) Wendl. Phœnicaceæ. Palm.

A tall, unarmed palm, 20 to 50 feet high, clothed beneath the crown with persistent leaf sheaths. The rigid leathery leaves are 4 to 5 feet in diameter and cut half way down into linear 2-lobed segments. The flowers are yellow and the fruits bluish. This palm is a native of the temperate Himalayas at altitudes of 6,000 to 8,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

47815. TRICHOLEPIS FURCATA DC. Asteraceæ.

A slender yellow-flowered composite, 2 to 6 feet in height, with the flowers in nodding heads. It is a native of the temperate parts of the Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 380.)

47816. TRICHOSANTHES HIMALENSIS C. B. Clarke. Cucurbitaceæ.

A climber with hairy, palmately 3-lobed leaves 5 inches wide, white flowers, and fruits 3 to 4 inches long. It is a native of Sikkim, India, where it grows at altitudes of 2,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 608.)

47817. TRIDAX PROCUMBENS L. Asteraceæ.

A perennial trailing composite, with short bristly hairs covering the branches and the deeply toothed, rhomboid leaves. The yellowish flowers appear in dense heads. This plant is a native of tropical America. (Adapted from *Queensland Agricultural Journal*, vol. 25, p. 484.)

47818. TRIUMFETTA RHOMBOIDEA Jacq. Tiliaceæ.

A herbaceous or somewhat woody plant, common in tropical and subtropical India and Ceylon up to 4,000 feet above the sea. It has dense cymes of yellow flowers and burlike fruits. The plant yields a soft, glossy fiber. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 202, and *Hooker, Flora of British India*, vol. 1, p. 395.)

47629 to 47830—Continued.

47819. *TSUGA BRUNONIANA* (Wall.) Carr. Pinaceæ.

A tall evergreen tree, sometimes attaining 120 feet in height, with spreading branches and pendulous branchlets. It is a native of north-eastern India, but is said to be not quite hardy in England. The wood is soft and white, and the bark is used for roofing. (Adapted from *Brandis, Forest Flora of India*, p. 527.)

47820. *DESMOS CHINENSIS* Lour. Annonaceæ.

(*Unona discolor* Vahl.)

A spreading shrub with slender leafy branches, shining oblong leaves up to 8 inches in length, and yellow odorous flowers. It is found in the tropical forests of northeastern and eastern India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 59.)

47821. *VACCINIUM DUNALIANUM* Wight. Vacciniaceæ.

A large erect shrub, with angular leafy branches, oblong-lanceolate slender-tipped leaves, and axillary racemes of small inconspicuous flowers. It is a native of Sikkim, Bhutan, and the Khasia Mountains, India. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 453.)

47822. *VACCINIUM NUMMULARIA* Hook. f. and Thoms. Vacciniaceæ.

A small, rigid, epiphytic plant with densely hairy, almost bristly branches, leathery leaves, and small racemes of rose-colored flowers. It is a native of Sikkim and Bhutan, India, growing at altitudes of 8,000 to 10,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 451.)

47823. *VACCINIUM SERRATUM* (Don) Wight. Vacciniaceæ.

A shrub, often epiphytic, found in Sikkim, Bhutan, and the Khasia Hills, India. The flowers have an acid taste and are used by the natives of the Garo Hills in their curries. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 218.)

47824. *VERNONIA VOLKAMERIAEFOLIA* DC. Asteraceæ.

A small robust tree with large leaves up to 12 inches in length, and very numerous flower heads in terminal leafless panicles. The persistent pappus is whitish. The tree is a native of Sikkim and the Khasia Mountains. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 240.)

47825. *VIBURNUM COLEBROOKEANUM* Wall. Caprifoliaceæ.

A large spreading shrub, 6 to 15 feet in height, with large oblong leaves and large corymbs of very small white flowers. It is common in the subtropical Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 5.)

47826. *VIBURNUM CYLINDRICUM* Buch.-Ham. Caprifoliaceæ.

A large shrub or small tree, common in the Himalayas of northeastern India at altitudes of 4,000 to 8,000 feet. The natives of Nepal are said to extract from the seeds an oil which they use for food and also for burning. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 232.)

47827. *VIBURNUM ERUBESCENS* Wall. Caprifoliaceæ.

A shrub or small tree with slender, ash-colored branches, drooping panicles of white or yellowish white flowers, and red ovoid fruits one-quarter of an inch long. The very hard, reddish wood is close and even grained and could be used as a substitute for boxwood and for carving.

47629 to 47830—Continued.

(Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 233, and Brandis, *Forest Flora of India*, p. 259.)

47828. ZANTHOXYLUM ACANTHOPODIUM DC. Rutaceæ.

A small tree, native to the hot valleys of the subtropical Himalayas, ascending to 7,000 feet. The berries are about the size of peas and contain one black seed. From these berries is extracted an essential oil, isomeric with oil of turpentine. The natives use the seeds and bark for dyspepsia, fever, cholera, etc. The wood is close grained and yellow and is used for walking sticks, pestles, etc. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 323.)

47829. ZANTHOXYLUM OVALIFOLIUM Wight. Rutaceæ.

A large shrub found in the Nilgiri Hills, Khasia Mountains, Assam, etc., in India, and also in Singapore, whose fruit and bark probably possess medicinal properties similar to those of other members of this genus. The light yellowish white wood is very hard and close grained. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 325.)

47830. ZANTHOXYLUM OXYPHYLLUM Edgeworth. Rutaceæ.

A climbing prickly shrub found at altitudes of 6,000 to 9,000 feet in the Himalayas from Gurlwal to Bhutan. The fruits are used medicinally, being supposed to have astringent, stimulative, and digestive properties. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 325.)

47831 to 47858.

From Darjiling, Bengal, India. Presented by Mr. G. H. Cave, curator, Lloyd Botanic Garden. Received June 11, 1919.

47831. ACER SIKKIMENSE Miquel. Aceraceæ.**Maple.**

A small tree, native to the hills of Sikkim and Bhutan, India, with heart-shaped green leaves and spikelike racemes which appear with the leaves. The wood is shining and gray. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 71.)

47832. ALBIZZIA PROCERA (Roxb.) Benth. Mimosaceæ.

A large tree, often 60 to 80 feet high, sometimes more, with yellowish or greenish white bark and large compound leaves composed of 6 to 8 pairs of leaflets. The yellowish white flowers are borne in heads in terminal panicles. The heartwood is light or dark brown, and is largely used for agricultural implements, wheels, etc. The tree is a native of moist places in Burma, Bengal, and southern India. (Adapted from Brandis, *Forest Flora of India*, p. 175.)

47833. ARTOCARPUS LAKOOCHA Roxb. Moraceæ.

A large evergreen tree, native to the foothills of eastern and southern India, with leathery oval or ovate leaves up to 10 inches in length and irregularly roundish edible acid fruits, which are 3 to 4 inches in diameter and velvety yellow when ripe. The bark yields a resinous gum, and from the bark also is prepared a fiber which is used for cordage. The root yields a yellow dye, and the hard, yellow heartwood is used for making furniture. The fruit and also the spadix of the flowers are used in curries. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 333.)

47831 to 47858—Continued.

47834. *BARLERIA STRIGOSA* Willd. Acanthaceæ.

A shrubby plant, much cultivated in India, but wild in the lower hills of Bengal, Orissa, etc. It is 2 to 4 feet in height, has large ovate leaves, and dense spikes of blue flowers. From the root is prepared a native medicine used as an antispasmodic. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 401, and *Hooker, Flora of British India*, vol. 4, p. 489.)

47835. *BISCHOFIA TRIFOLIATA* (Roxb.) Hook. Euphorbiaceæ.
(*B. javanica* Blume.)

A large tree, found in shady ravines in the hills of Kumaon, Gurhwal, India, south to Ceylon, and also in southern Asia. It is very handsome, attaining a height of 70 feet, with a dense oval crown and deep-green foliage which turns red before falling. The pale-red fine-grained wood is used for furniture. (Adapted from *Brandis, Forest Flora of India*, p. 446.)

47836. *BOEHMERIA MACROPHYLLA* D. Don. Urticaceæ.

A broad-leaved shrub, native to northern and northeastern India, where it ascends to 4,000 feet. The bark yields a beautiful fiber, much prized for fishing nets. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 467.)

47837. *BOEHMERIA PLATYPHYLLA* D. Don. Urticaceæ.

A large shrub or small tree with opposite, broadly ovate leaves, native to the Khasi Hills, eastern Bengal and southern India. The wood is moderately hard and reddish brown. All of the species of this genus are said to yield good fibers. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 1, p. 481.)

47838. *CALLICARPA MACROPHYLLA* Vahl. Verbenaceæ.

A tall shrub with the branches and stems thickly covered with gray woolly felt. The narrow wrinkled leaves are 6 to 10 inches long, and the small rose-colored flowers are in much-branched cymes. The shrub is a native of Bengal and Burma, India. The heated leaves are applied to rheumatic joints. (Adapted from *Brandis, Forest Flora of India*, p. 368.)

47839. *CITRUS SINENSIS* (L.) Osbeck. Rutaceæ.

Orange.

"Sikkim orange." (*Cave.*)

47840. *DYSOXYLUM BINECTARIFERUM* (Roxb.) Hook. f. Meliaceæ.

An evergreen tree, 30 feet or more in height, with compound leaves 9 to 18 inches long, composed of 5 to 9 leaflets, and panicles of pale-green flowers. The leathery reddish fruits are $2\frac{1}{2}$ inches long, and the seeds are dark purple and polished. This tree is a native of the Khasia Hills and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 546.)

47841. *ELAEAGNUS PYRIFORMIS* Hook. f. Elæagnaceæ.

A shrubby plant with oblong or elliptic, somewhat silvery leaves, clustered flowers, and small turgid fruits, one-third of an inch long, covered with brown, hardly shining scales. The plant is a native of the Mishmi Hills, India. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 202.)

47831 to 47858—Continued.

47842. *ENGELHARDTIA SPICATA* Leschen. Juglandaceæ.

A large handsome tree, belonging to the walnut family, native to the foothills of the eastern Himalayas. The thick brown bark contains much tannin; the wood shows a beautiful grain and is said not to warp. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 244.)

47843. *FICUS ALTISSIMA* Blume. Moraceæ.

A large, spreading tree, native to the tropical Himalayas. It is said to yield as good caoutchouc as its relative, *Ficus elastica*. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 342.)

47844. *GYNOSTEMMA PEDATUM* Blume. Cucurbitaceæ.

A climbing herbaceous plant with leaves composed of three to five membranous leaflets up to 5 inches in length and globose fruits about the size of a pea. It is a native of northeastern India. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 633.)

47845. *IPOMOEA KINGII* Prain. Convolvulaceæ.

Morning-glory.

A large white-flowered climber belonging to the morning-glory family, with narrow heart-shaped leaves up to 6 inches in length. It is a native of northeastern India at altitudes of 2,000 to 5,000 feet. (Adapted from *Journal of the Asiatic Society of Bengal*, vol. 63, p. 110.)

47846. *LEONOTIS NEPETAEFOLIA* (L.) Ait. Menthaceæ.

An annual, 4 to 6 feet high, with a stem as thick as one's finger, thin crenate leaves, and whorls of orange-red flowers. It is native to the hotter parts of India, and is distributed to tropical Asia, Africa, and America. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 691.)

47847. *MANISURIS STRIATA* (Nees) Kuntze. Poaceæ.

Grass.

A tall slender grass, with a stem 3 to 4 feet long, very narrow, flat leaves 2 to 4 feet in length, and pale, slender spikes about 2 inches long. It is a native of the Sikkim Himalayas, India, where it ascends to 4,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 157.)

47848. *PANICUM PATENS* L. Poaceæ.

Grass.

A creeping grass, found throughout India, with a leafy stem 1 to 3 feet long, leaves 2 to 6 inches in length, and spreading panicles. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 7, p. 57.)

47849. *PHLOGACANTHUS PUBINERVIUS* T. Anders. Acanthaceæ.

A much-branched shrub, 3 to 8 feet in diameter, with numerous axillary cymes of red flowers. It is a native of Sikkim, Bhutan, and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 513.)

47850. *PUERARIA PHASEOLOIDES* (Roxb.) Benth. Fabaceæ.

A twining, scarcely woody plant, clothed with dense, spreading, brown hairs; native to the tropical regions of the eastern Himalayas. The leaflets are green above and densely matted with gray hairs beneath. The reddish flowers are borne in copious long-stemmed racemes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 199.)

47851. *RHODODENDRON CAMELLIAEFLOSUM* Hook. f. Ericaceæ.

Rhododendron.

A Himalayan rhododendron, 2 to 6 feet tall. It has very thick deep-green leathery leaves and pure white or faintly pinkish flowers about 1½ inches wide. (Adapted from *Curtis's Botanical Magazine*, pl. 4932.)

47831 to 47858—Continued.

47852. *RHYNCHOTECHUM VESTITUM* Wall. Gesneriaceæ.

An erect, simple, shrubby plant, about 3 feet high, with yellow-hairy, elliptic leaves 9 inches in length, many-flowered axillary cymes of rose-purple flowers, and globose, glistening-white berries more than a quarter of an inch in diameter. The plant is a native of Sikkim, Bhutan, and Assam, India. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 373.)

47853. *RUBIA SIKKIMENSIS* Kurz. Rubiaceæ.

A stout, handsome, creeping plant, native to Sikkim and Bhutan, India. The stem and root of this plant yield the brilliant red dye used by the natives of Naga Hills and Manipur, India. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 577.)

47854. *SALIX TETRASPERMA* Roxb. Salicaceæ. Willow.

This willow is a native of India, where it grows at altitudes of 2,000 to 7,000 feet and reaches a height of 40 feet. The twigs are useful for basketry, and the foliage as forage. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 488.)

47855. *TERMINALIA MYRIOCARPA* Huerck and Muell. Arg. Combretaceæ.

A very large evergreen tree, abundant in the subtropical valleys of Sikkim and Bhutan, India. The heartwood is brown, beautifully mottled with dark streaks, and is used for building purposes and for boxes. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 37.)

47856. *TERMINALIA TOMENTOSA* (Roxb.) Wight and Arn. Combretaceæ.

A large deciduous tree, 80 to 100 feet tall, common throughout the moister parts of India. It yields copiously a transparent gum which is eaten by the Santals. The bark is used for tanning. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 37.)

47857. *URARIA LAGOPUS* DC. Fabaceæ.

A woody, densely caespitose, perennial leguminous plant, reaching 10 to 12 feet in height, with trifoliolate leaves and copious terminal and axillary racemes of purple flowers. It is a native of India from the Punjab to Assam. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 156.)

47858. *WALLICHIA DENSIFLORA* Mart. Phœnicaceæ. Palm.

A palm with a very short stem or even stemless, found throughout the tropical Himalayas from Kumaon eastward. The leaves are 8 to 10 feet long, the spathes are purple, and the male and female flowers are yellow and purplish, respectively. The dull-purple fruits are about half an inch in length. The leaves are sometimes used for fodder, and also for thatching. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 299, and *Hooker, Flora of British India*, vol. 6, p. 419.)

47859. *AMARANTHUS PANICULATUS* L. Amaranthaceæ. Huauhtli.

From the City of Mexico, Mexico. Presented by Dr. A. L. Herrera, Director de Estudios Biologicos. Received June 30, 1919.

"Seeds of the edible plant popularly called *alegría*, cultivated in the Federal District." (Herrera.)

The seed is roasted or popped, ground into meal, and made into sweet cakes. The meal is also said to be eaten with sugar and milk.

For previous introduction see S. P. I. Nos. 45811 and 46310.

47860. AMHERSTIA NOBILIS Wall. Cæsalpiniaceæ.

From Sibpur, near Calcutta, India. Presented by the curator, Royal Botanic Garden. Received June 30, 1919.

Named in honor of Lady Amherst. A medium-sized tree, native to Burma, and considered the most beautiful of all flowering trees. Its immense condalabrumlike sprays of red and yellow flowers drooping from every branch among the handsome foliage present an appearance of astonishing elegance and loveliness. It is in flower during the greater part of the year, but its chief flowering season in Ceylon is from January to April, i. e., the dry season. It produces seed very scantily anywhere, a pod or two occasionally being all that can be obtained, and even these are often infertile. Propagation by layering, therefore, has to be adopted. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 291.)

47861 to 47864. CITRUS spp. Rutaceæ.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant-Breeding Station. Received June 30, 1919.

47861. CITRUS GRANDIS (L.) Osbeck.
(*C. decumana* Murr.)

Pummelo.

47862. CITRUS sp.
Djeroek nipis.

47864. CITRUS sp.
Djeroek manis.

47863. CITRUS sp.
Djeroek garoet.

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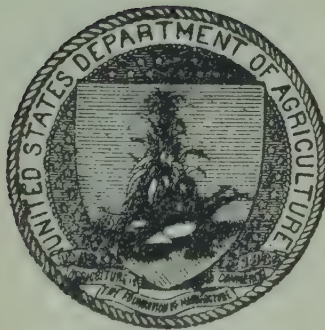
Issued July, 1922.

U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JULY 1
TO OCTOBER 31, 1919.

(No. 60; Nos. 47865 to 48426.)



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1922.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM JULY 1 TO OCTOBER 31, 1919 (NO. 60; NOS. 47865 TO 48426).

INTRODUCTORY STATEMENT.

There are many experimenters who appear not to understand the problem of plant introduction and who, after applying for interesting plants which they see described and finding none left for distribution, since others who applied previously had received them, become discouraged. It should be pointed out that obtaining plants from out-of-the-way parts of the world is a very different thing from the purchase of plants from a nursery. We may through a traveler, a transient correspondent, or one of our own explorers get a small quantity of seed of a rare tree, for example. We often can not get more seed of this species, even by going to very great expense, as it may be found in some out-of-the-way place and may fruit very infrequently. If it can be grown only from seed and the trees do not bear until they are 8 or 10 years old, we simply can not supply more than the number of plants grown from the original introduced seeds until, years later, either the seedlings fruit in this country or a rare opportunity occurs whereby we may obtain it again from its foreign source. The most constructively helpful experimenters are those who appreciate these conditions and who, when they can not get what they want, are glad to test other introductions which we can send them.

This sixtieth inventory has a number of noteworthy new introductions.

Mr. Maiden, of Sydney, sends in a "native cherry" tree (*Exocarpus cupressiformis*, No. 47866) which produces fruit morphologically similar to the cashew nut and the raisin tree, the pedicel below the seed instead of the parts surrounding it being enlarged.

Dr. da Costa sends from Para the pupunha palm (*Guilielma speciosa*, No. 47868) which apparently resembles the pejibaye of Costa Rica, producing a fruit which is boiled and eaten like potatoes. These species of *Guilielma* deserve especial study by tropical horticulturists.

Mr. Wragge sends a quantity of seed of the nikau palm from New Zealand (*Rhopalostylis sapida*, No. 47878), which, it is noted, stands grass fires well and therefore ought to be adapted for naturalization in southern Florida, where the species grows well. Mr. Wragge also sends in seeds of the puriri (*Vitex lucens*, No. 47881), a valuable timber tree from the North Island, where it is known as the "New Zealand oak" because of the strength and durability of its wood.

Dr. Trabut sends from Algeria seeds of a good pasture grass (*Oryzopsis miliacea*, No. 47898) growing on saline soils.

S. P. I. No. 47899 records the success made in Cuba by Irving L. Ward with one of our introductions, *Gonolobus edulis* (No. 35249), which bears soft green fruits that are of good quality when baked or when fried like eggplant.

Dr. Johnson sends seeds of the Guatemalan lignum-vitæ (*Guaia-cum guatemalense*, No. 47900), which Wilson Popenoe says is a beautiful flowering tree remaining in bloom from late February or early March for several weeks. It has proved adapted to growth in southern Florida and will add a feature to the landscape.

Mr. Tacea, of Yucatan, sends seeds of the *Jatropha curcas* (No. 47916) with the report that, although commonly supposed to be a purgative, the nuts are eaten there commonly, even being made into confectionery. A recent careful analysis by Dr. Power of the seeds of this *Jatropha* from trees grown in Florida failed to reveal any substantial quantity of the purgative substance, and tests on animals produced negative results. If its seeds may be used as table nuts, this tree will be a valuable addition to the food plants of southern Florida, since it grows very luxuriantly there and bears abundantly.

Mr. Poynton has furnished the seeds of the kauri pine of New Zealand (*Dammara australis*, No. 47917), one of the greatest timber trees of the world and one of the most stately of all forest trees. Every effort should be made to grow it in America.

Through Anderson & Co., of Sydney, Australia, we have imported seeds of a thin-shelled variety of the macadamia or Queensland nut (*Macadamia ternifolia*, No. 47918). Since this species is fruiting well in southern Florida, a thin-shelled variety will add new interest to its possibilities.

Citrus webberii (No. 47919) is the name given by Wester to what he declares is the largest loose-skinned citrus fruit in the world, coming from Cotabato in the Philippine Islands.

The burakan (*Ipomoea nymphaeaeifolia*, No. 47920) is, according to Wester, a most gorgeous morning-glory, producing great masses of bright-yellow flowers.

Mr. H. R. Wright, of Auckland, who has sent us some very interesting new deciduous fruit varieties, now sends in a new seedling

of the Washington Navel orange (No. 47931) called Dunning's Seedless, which is reported in Queensland to be better than its parent.

Asst. Surg. Gen. Carter has obtained from Guayaquil, Ecuador, seeds of the naranjilla (*Solanum quitoense*, No. 47951), bearing fruits the size of a mandarin orange which have a very acid flavor and are used there for ice creams and cold drinks.

Mr. J. Burt Davy sends from the Transvaal the buchu (*Barosma betulina*, No. 47953), a shrub which, according to the description, vies with the gardenia as an ornamental, having starlike purple flowers. There are two species, both of which furnish the barosma camphor of commerce.

Mr. Milo Baker, of Los Angeles, sends budwood of a species of Casimiroa (No. 47957). Since interest in this new fruit tree is growing in California and Florida, the collecting into a single orchard of all the known varieties and species is the next logical step in its development.

Dr. da Costa has presented us with the seeds of an important oil palm (*Oenocarpus bataua*, No. 47965), native to the Amazon region, which yields an oil scarcely distinguishable from olive oil, and the ucuúba (*Virola sebifera*, No. 47966), a bush that, according to Lange, bears great quantities of nuts rich in oily substances.

Dr. Bertoni sends in from Paraguay, the home of the feijoa, a new fruit tree of the myrtle family (*Britoa sellowiana*, No. 47968), about which little seems to be known in this country. He also presents a species of *Solanum* (*S. chacoense*, No. 47972) which is closely related to the potato and which he remarks is not attacked there by any insect or disease. He suggests that it may be useful to potato breeders.

The success at Del Monte, Calif., of the yang mei (*Myrica rubra*) is worth especial mention, and Mr. T. Lee, to whom is due its success there, has sent seeds (No. 48000) of this valuable Chinese fruit tree, which he collected from his own trees. There are few handsomer fruits in the world than this yang mei.

Dr. Cramer, the plant breeder of Java, has sent a collection of seeds from selected strains of the West African oil palm (*Elaeis guineensis*, Nos. 48001 to 48010) and seeds of the *Mimusops kauki* (No. 48011), which has fruits flavored like those of the sapodilla (*Achras zapota*) and prefers situations near the sea and so may be valuable for the Miami beaches.

Mr. Day, of Rio de Janeiro, furnishes seed of a variety of Job's-tears (*Coix lacryma-jobi*, No. 48012) which produces on low moist or marshy soils large crops of good fodder and may prove adapted to use on the Everglades.

Mr. Gossweiler, of Angola, Portuguese West Africa, has sent in a very interesting new summer vegetable (*Rumex abyssinicus*, No.

48023) called the Abyssinian Rumex. Its very vigorous growth and production of great masses of leaves of most delicate texture make it a very promising new vegetable for all-summer culture.

From Dr. Proschowsky, of Nice, France, who has sent in so many interesting plants, we have received seeds of *Casuarina deplancheana* (No. 48026), which is native to New Caledonia and deserves trial in Florida. It is new to this country. He also sends a new and very rare climber (*Semele androgyna*, No. 48032) and a remarkable species of Albizzia (*A. lophantha*, No. 48034) from southwestern Australia, which produces on its roots bacterial nodules weighing as much as 2 pounds.

Through the generosity of M. Jules Goffart, of Tangier, whose collection of acacias is noted, we have received 39 species of acacias (Nos. 48035 to 48073). The beauty of the flowers and the usefulness of the trees for street and sand-dune plantings and as furnishing valuable woods, tannins, gums, and other material make this a very valuable gift.

Through Dr. Koningsberger, of the Buitenzorg Garden, there has come in a quantity of seed of a variety of the well-known Job's-tears, called djali bras (No. 48081), which can be grown anywhere in the Tropics and which, unlike the ordinary Job's-tears, has seeds with thin soft shells. These when cooked whole, like rice, or ground into meal are said to make an excellent food. A new tropical grain crop like this deserves study.

Dr. Galloway calls attention to a promising new rose (*Rosa coriifolia*, No. 48086) which has been used by Dr. Van Fleet as a stock because of its vigor, hardiness, upright smooth stems, and lack of suckers.

Metrosideros tomentosa (No. 48151) from New Zealand, according to Mr. Hallet, is covered with crimson flowers in summer. Its spreading nature and its ability to withstand salt spray and to stand as much frost as the lemon may make it an excellent windbreak for the Florida seacoasts.

A wild persimmon (No. 48162) from Puerto Bertoni, Paraguay, which may be useful for stocks or for breeding purposes, is sent in by Mr. Bertoni.

Entelea arborescens (No. 48165), which grows along the north coast of New Zealand, produces very light wood, about half the weight of cork. Mr. Wright, who sends in seeds, says it is one of the handsomest of small trees. The large drooping clusters of pure-white flowers, which are an inch in diameter, ought to attract the attention of some one who lives where it can be grown. Has its wood ever been compared with balsa wood?

Mr. Alfred Bircher, of Matania el Saff, Egypt, sends in seeds of *Eugenia aquea* (No. 48223), a myrtaceous tree which bears fruits the size of loquats with an aromatic flavor.

Mr. J. F. Rock, of Honolulu, during a hurried trip to Siam, sent back seeds of the *Hydnocarpus anthelminthica* (Nos. 48227 and 48228), which yields one of the oils used in the treatment of leprosy.

Mr. J. Burt Davy has sent from Victoria Falls, Rhodesia, a remarkable collection (Nos. 48230 to 48261) of seeds of the timber trees and of the ornamental trees and shrubs of that region; among them are the Rhodesian mahogany, Rhodesian teak, mukwa, Zambezi almond, and the gum-copal tree. It is hoped that some of these may be valuable for the reforestation work being carried on by the Hawaiian Sugar Planters' Association on the mountain areas of the Hawaiian Islands.

It is strange that a potherb like *Basella rubra* (No. 48262) should be in almost universal use in Bengal and practically unknown as such in America, though it grows and forms an attractive screen in our Southern States. Can there be different strains of it, or have we failed to learn to like it or to prepare it properly?

It is to be hoped that the common bamboo of northern Bengal (*Dendrocalamus hamiltonii*), which grows to 80 feet in height and furnishes edible shoots and valuable timber, will prove hardy enough for our Southern States. Seeds of this (No. 48266) were sent us by Col. A. T. Gage, of Darjiling, India, who at the same time sent seeds of *Dillenia pentagyna* (No. 48267), the flower buds and fruits of which are edible. Since *Dillenia indica* has fruited on Mr. George B. Cellon's place at Miami, Fla., it is possible that this other member of the genus will grow in that region.

The tree which furnishes the easily worked wood for tea chests and which grows at altitudes of 3,000 feet (*Duabanga sonneratioides*, No. 48268) would probably be a valuable addition to the forest trees of Porto Rico and Hawaii; and, since its seeds germinate readily, it may prove adaptable for forest purposes.

Maesa chisia (No. 48272), which covers large areas of the Darjiling Hills and according to Gamble affords ideal protection to planted trees, may prove of use in the reforestation work in Hawaii.

Subtropical species of *Prunus* may play a rôle in the stock problem of our Southern States, and *Prunus cerasoides* (No. 48276), a large tree often cultivated in the Himalayas, is worthy of investigation.

The yellow-fruited raspberry, which, according to Gamble, is one of the best wild fruits of India, can not fail to interest the breeders of the genus *Rubus*. Seeds of this *Rubus* (*R. ellipticus*, No. 48278) were sent us by Col. Gage.

Since the beautiful grass *Thysanolaena agrostis*, which the writer sent from Poona in 1902, has been established near Orlando, Fla. by Mr. Nehrling, its relative *T. maxima* (No. 48279) certainly should be tried there.

Through the kindness of Mr. H. J. Elwes, the well-known authority on British trees, we have received a most valuable collection of 123 species of mostly ornamental trees, shrubs, and plants (Nos. 48304 to 48426) made by the distinguished explorer of western China, Mr. G. Forrest. These include 2 species of *Buddleia*; *Lonicera henryi*, distinguished by being one of the 3 evergreen-leaved vines which are hardy in Boston; 12 species of *Meconopsis*, the so-called "blue poppy" of western China, which is so beautiful but so difficult to grow anywhere; 48 species of Chinese *Primulas*, some still undescribed; 3 species of *Pyrus*; 12 species of *Rubus*; and the new mountain ash, *Sorbus vilmorini*, from Yunnan.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels; and the descriptive and botanical notes have been arranged by Mr. G. P. Vasey. Eseltine, who has had general supervision of this inventory, as of all other publications of this office. The manuscript has been prepared by Miss Esther A. Celandier.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 6, 1921.

INVENTORY.¹

47865. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes, Comissão de Linhas Telegraphicas Estrategicas de Matto Grosso ao Amazonas. Received July 1, 1919.

"Peanuts grown by Mr. R. G. Reidy on his property, 'Cascatinha,' 500 meters above sea level, at the station called Martins Costa, on the Central Railway of Brazil, State of Rio de Janeiro. The original seed, from the wilds of Matto Grosso, where it was grown by the Indians, was given to Mr. Reidy by the Comissão in 1918 and is understood to have been selected for its very large size. The specimens sent are reduced in size, but are still much larger than the common peanut of Matto Grosso. Mr. Reidy stated that the development of the crop was retarded by damage resulting from floods. The product shows a marked modification in coloration." (*Magalhaes.*)

47866 and 47867.

From Sydney, Australia. Presented by Mr. J. H. Maiden, director, Botanic Gardens. Received July 2, 1919.

47866. *EXOCARPUS CUPRESSIFORMIS* Labill. Santalaceæ.

Native cherry. A small tree about 20 feet high with very numerous green, wiry branches, sometimes collected in a dense conical head, sometimes loose and pendulous at the ends. The leaves are reduced to tiny alternate scales. The flowers are small, in terminal spikes, and soon fall off, except one in each spike; after fertilization this one is raised on an obconical pedicel which thickens to a diameter of one-fourth of an inch and is red and succulent. The fleshy edible pedicel, under the small, dry, globular fruit, has been likened to a cherry with the stone outside. The close-grained, handsome wood is used for turning and cabinet purposes. (Adapted from *Bentham, Flora Australiensis*, vol 6, p. 229, and *Maiden, Useful Native Plants of Australia*, pp. 30 and 534.)

47867. *TIMONIUS RUMPHII* DC. Rubiaceæ.

A tall shrub or small tree, with small drupes which have much the appearance of the crab or wild apple of Europe. The wood is light in color, close grained, and suitable for lining boards; it is easily worked and resembles somewhat the English sycamore. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 63 and 607.)

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

47868 and 47869.

From Para, Brazil. Presented by Dr. J. Simao da Costa. Received July 3, 1919.

47868. *GUILIELMA SPECIOSA* Mart. Phœnicaceæ.
(*Bactris gasipaes* H. B. K.)

Palm.

"*Pupunha*. Seeds of our *Guilielma speciosa*. The trees grow in clusters and are very graceful. The fruit, borne in large bunches, is edible. The natives prefer to boil it and eat it with cane sirup, but Europeans domiciled here have learned to eat the fruit boiled like the ordinary side dishes composed of all sorts of vegetables, as potatoes, yams, etc. The seeds yield an oil of very good quality, but in such small proportions that no one has ever attempted its extraction on a commercial scale." (*Da Costa*.)

For an illustration of this tree, see Plate I.

47869. *MAURITIA ARMATA* Mart. Phœnicaceæ.

Palm.

"*Carana*. Seeds of *Mauritia armata*, from the fleshy pericarp of which a wine is made. The inner portion is a vegetable ivory as hard as that from *Phytelephas macrocarpa*. As the fruit is very small the buttons made are also much smaller than can be made from other vegetable ivories." (*Da Costa*.)

47870 and 47871.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received July 7, 1919.

47870. *ACHRADELPHA MAMMOSA* (L.) O. F. Cook. Sapotaceæ. Sapote.
(*Lucuma mammosa* Gaertn.)

"A rich-colored variety of sapote, which is also of excellent flavor." (*Dawe*.)

47871. *ANNONA MURICATA* L. Annonaceæ.

Soursop.

"This is a yellow-seeded form and may be a distinct species." (*W. E. Safford*.)

47872. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

From Trujillo, Peru. Presented by Mr. A. M. Lynch. Received July 7, 1919.

Nuña. Seeds white, nearly spherical, about three-eighths of an inch in diameter.

47873. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

From North Rose, N. Y. Presented by Mr. O. S. Weed. Received July 7, 1919.

"In 1917 I made several crosses between the blightless *Red Kidney*, *Marrow*, *Pea* bean, and *Yellow Eye*. In 1918 I again planted these crosses and the results were really marvelous in the vast numbers of peculiar beans obtained. I am sending you a few of the hybrids." (*Weed*.)



A PALM WHICH RIVALS THE BANANA AS A FOOD PRODUCER. (GUILIELMA SPECIOSA MART., S. P. I. No. 47868.)

The pupunha, which grows wild in the Amazon Valley of Brazil, produces large bunches of yellow fruits the size of an apricot. When boiled, these fruits have somewhat the texture and flavor of the chestnut and are of high food value. The plant, which is perhaps not specifically distinct from the pejibaye of Costa Rica (though the latter is usually considered to be *G. utilis*, not *G. speciosa*), should be cultivated throughout the Tropics. (Photographed by P. H. Dorsett at the Botanical Garden, Rio de Janeiro, Brazil, January 1, 1914; P14589FS.)



A SEEDLESS WHITE SAPOTE. (CASIMIROA SP., S. P. I. No. 47957.)

When undertaking the improvement of a cultivated fruit, one of the chief aims of horticulturists seems to be the development of seedless forms. The above illustration shows a seedless white sapote, grown by Mr. I. L. Collins at Orange, Calif. It is not rare for trees of this species to produce such fruits, but it is not yet certain that grafting or budding will perpetuate the characteristic; it is quite possible that seedlessness, in this species, may often be due to defective pollination. (Photographed by David Fairchild, Orange, Calif., October 10, 1919; P25706FS.)

47874 to 47876.

From Bogota, Colombia. Presented by Mr. W. O. Wolcott. Received July 9, 1919.

47874. *ANNONA MURICATA* L. Annonaceæ. Soursop.

"The soursop, known in Spanish-speaking countries as guanábana, sometimes shortened to guanaba, is unexcelled for sherbets and refreshing drinks. Like other anonas, however, it does not always fruit abundantly when grown from seed, and it will be necessary to establish named varieties, propagated vegetatively, before soursop culture can become the basis of an industry.

"The fruit is oblong, sometimes 4 or 5 pounds in weight, dark green, and prickly on the surface. The flesh is white and cottony or tough in texture, so that it is not good to eat out of hand. But it has a rich, aromatic, and perfectly delicious flavor, and when mixed with milk it makes one of the best drinks of the Tropics—the champola of Havana restaurants and cafés.

"The tree is tropical in its requirements and can be grown in the United States only in the southern part of Florida, approximately the area between Palm Beach and Punta Gorda on the north to Key West on the south. It is small, rarely attaining more than 20 feet in height, and has thick glossy leaves and large greenish flowers. It may be mentioned that the pollination of the anonas has never been studied sufficiently, and it is probable that their productiveness may be increased by attention to this subject. Mr. P. J. Wester and others have shown that most species are dependent upon cross-pollination, and if the insects which normally effect this are not present something will have to be done to insure its being accomplished." (*Wilson Popenoe.*)

47875. *ANNONA SQUAMOSA* L. Annonaceæ. Sugar-apple.

"The sugar-apple, usually known in Spanish-speaking countries as *anona* or *anón*. This is one of the best of the anonas for strictly tropical regions, and it can even be grown where there are light frosts. It is too tender, however, for cultivation in California. In Florida it succeeds as far north as Cape Canaveral, though it is not commonly grown north of Palm Beach. It is more productive than several of the other anonas, especially when grown in a rather dry climate.

"The sugar-apple is a small tree, sometimes not attaining more than 12 or 15 feet in height, and rarely more than 20 feet. Its fruits are the size of apples and suggest pine cones in general appearance, whence the name 'pinha' which is used in Brazil. When fully ripe the fruit is soft and the carpels separate readily, exposing the snow-white, delicately flavored pulp. Like the cherimoya, the sugar-apple is eaten out of hand; it resembles the cherimoya in flavor, but has less acidity and is not, therefore, quite so delicious.

"The plant is widely distributed throughout the Tropics. It has become naturalized in parts of India and is highly esteemed in that country as a fruit. The Anglo-Indians call it 'custard-apple,' but this name is applied to all anonas without discrimination and leads to confusion. The Hindus have named it 'sharifa,' meaning noble, and 'sitaphal,' the fruit of Sita, one of their gods.

"In short, the sugar-apple is one of the important fruits of the Tropics. It is particularly adapted to dry regions, but does not withstand more

47874 to 47876—Continued.

than a few degrees of frost and is successful only in regions which rarely experience temperatures below freezing." (*Wilson Popenoe*.)

47876. SOLANUM QUITOENSE Lam. Solanaceæ.

Naranjilla

A hairy-leaved unarmed shrub, 4 to 8 feet in height, bearing large quantities of small, acid, peculiarly fragrant fruits which the Spaniards call "Quito oranges" because of their size, appearance, and flavor. They are used for salads and preserves and for making cooling drinks and ices; a little of the juice is used in the preparation of the tea called maté.

For previous introduction and description, see S. P. I. No. 42034.

47877. COSTUS SPECIOSUS (Koen.) J. E. Smith. Zinziberaceæ.

From Oneco, Fla. Plants purchased from Reasoner Bros. Received July 11, 1919.

One of the most elegant plants of this family; its stout, spirally twisted stem carries its glossy leaves and dense, showy, white-flowered spike above the brushwood in the Indian tropical jungles. It is common everywhere in India and especially in Bengal, where it frequents moist, shady places. The tuberous horizontal rootstock yields 24 per cent starch, and in Ceylon the poorer natives use it for food, but it is not cultivated. In some parts of India the tuber is cooked in sirup and made into a preserve. It is also used as a substitute for ginger. (Adapted from *Watt, Dictionary of the Economic Products of India* p. 279; *Hooker, Flora of British India*, vol. 6, p. 249; and *Chevast, C. Congrès d'Agriculture Coloniale, Gouv. Gen. de l'Indo-Chine, Hanoi series, No. 2, 1918*.)

47878 to 47881.

From Auckland, New Zealand. Presented by Mr. Clement L. Wragge, Waiata Botanic Garden, Birkenhead. Received July 11, 1919.

47878. RHOPALOSTYLIS SAPIDA (Soland.) Wendl. and Drude. Phœnicaceæ.
(*Areca sapida* Soland.)

Nikau palm.

This elegant and graceful palm, found usually in thick brush, is the only species of this family represented on the mainland of New Zealand. The tree is sometimes 30 feet in height, with a smooth, polished, ringed green stem and pinnate leaves 14 feet in length. Each tree bears two or three spathes, 13 inches long, which inclose the flower buds. The white flowers, sessile on a thick, fleshy, white axis, are followed by ovoid drupes, half an inch in length, which are a vivid red when ripe and look like a huge bunch of coral. The fruits are extremely hard and have been used for shooting birds. Although so hard, they are much relished by the wild parrots. The leaf strips are much used by the Maoris for weaving into baskets and kits of every description. The leaves are used in the construction of the native huts; a framework is made of manuka sticks, and the roof and walls of palm leaves which form a water-tight covering. The top of the stem is fleshy and juicy and is sometimes eaten. The nikau palm will stand fire almost as well as the cabbage tree (*Cordyline australis*). After a big bush fire most of the trees are killed, except the nikaus, the cabbage trees, and the fern trees. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 84.)

47878 to 47881—Continued.

47879. COPROSMA LUCIDA Forst. Rubiaceæ.

A shrub about 15 feet in height, with leathery, glossy bright-green leaves, 2 to 5 inches long. The inconspicuous flowers are wind-pollinated. The plant is often cultivated in gardens for the beauty of its small berry-like drupes which are brilliant orange-red. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 392.*)

47880. STYPHELIA ACEROSA (Gaertn.) Laing and Blackwell. Epacridaceæ.
(*Cyathodes acerosa* R. Br.)

Mingi-mingi. A shrub or small tree with blackish branches and rigid, pungent, needle-shaped leaves about half an inch in length, with recurved margins and three to seven parallel veins on the under surface. The small flowers, appearing in October and November, have whitish funnel-shaped corollas and form small white or red drupes. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 328.*)

47881. VITEX LUCENS Kirk. Verbenaceæ. Puriri.

A fine tree, from 50 to 60 feet in height, native to New Zealand but restricted to the northern part of the North Island. It is often called the New Zealand oak, on account of the strength and durability of its wood, which is not injured by damp or exposure and is therefore extremely valuable for shipbuilding purposes. The logs are often perforated with holes, the work of a soft-bodied grub which develops into the puriri moth. These holes do not affect the timber, except in so far as it has sometimes to be cut to disadvantage. The handsome, bright glossy-green leaves are 3 to 5 foliolate with leaflets 3 to 4 inches long. The pink or red 2-lipped flowers, produced more or less all the year round, are in clusters of four to eight in axillary panicles. The roots of the puriri never penetrate deeply into the ground but lie near the surface, so the tree is easily blown over in a gale. (Adapted from *Laing and Blackwell, Plants of New Zealand, p. 350.*)

47882 to 47894.

From La Moncloa, Madrid, Spain. Presented by Sr. José Hurtado de Mendoza, director, Estación de Ensayo de Semillas. Received July 12, 1919.

47882 to 47884. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

47882. *Mocho colorado.* 47884. *Toledo sin barbas.*

47883. *Rabón.*

47885 to 47893. TRITICUM DURUM Desf. Poaceæ. Durum wheat.

47885. *Blanca de Nulas.* 47890. *Raspinegro.*

47886. *Caña maciza.* 47891. *Rubio entrelargo del Montijo.*

47887. *Carita de ratón.* 47892. *Rubio candeal.*

47888. *Enano de Jaen.* 47893. *Semental.*

47889. *Granadino.*

47894. TRITICUM TURGIDUM L. Poaceæ. Poulard wheat.
Baza.

47895 to 47897.

From Montevideo, Uruguay. Presented by Sr. R. S. Silveira. Received July 15, 1919.

47895. *HELIANTHUS ANNUUS* L. Asteraceæ.

Sunflower.

"Seeds of a Russian variety grown in this country." (*Silveira.*)

47896 and 47897. *RICINUS COMMUNIS* L. Euphorbiaceæ. **Castor-bean.**

47896. The ordinary variety with small gray seeds.

47897. Var. *sanguineus*, with large reddish seeds.

47898. *ORYZOPSIS MILIACEA* (L.) Benth. and Hook. Poaceæ.

Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received July 16, 1919.

"I am sending seeds of *Oryzopsis miliacea*, an indigenous grass which is quite resistant in saline situations and forms a good pasturage in such places." (*Trabut.*)

47899. *GONOLOBUS EDULIS* Hemsl. Asclepiadaceæ.

From La Gloria, Cuba. Presented by Mr. Irving L. Ward. Received July 17, 1919.

"Seeds which I grew from S. P. I. No. 35249 sent me from Washington, June 12, 1913. The soft, green fruits are very good when fried like eggplant. They are also delicious baked, after being peeled and boiled until tender in a little water; they should be baked only long enough to dry off the water." (*Ward.*)

47900. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.

Guayacan:

From Zacapa, Guatemala. Collected by Dr. F. S. Johnson. Received July 19, 1919.

"The *guayacan*, sometimes called by Americans *lignum-vitæ*, is found in abundance upon the plains of the lower Motagua valley, in the vicinity of El Rancho, Zacapa, and other towns. It is a small tree, sometimes attaining 30 feet in height, usually somewhat spreading in habit, with a trunk sometimes gnarled and twisted and having slender branches. The leaves are small and delicate. Toward the end of the dry season, i. e., in February or March, the tree comes into flower and is then a mass of lavender-purple, distinguishable for long distances across the plains. It remains in bloom for several weeks.

"The wood is exceedingly hard. Though difficult to work, it is of value for cabinet purposes. The heartwood is rich brown in color, while the sapwood which surrounds it is light yellow. Both take a fine polish.

"The tree thrives in a warm climate, with little rainfall. The soil upon which it grows is often rocky and poor. Whether it will stand any frost can not be stated, but it seems likely that it may succeed in parts of California, Arizona, and perhaps Florida. It should be given a trial as an ornamental." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44858.

47901. CANARIUM OVATUM Engl. Balsameaceæ. Pili nut.

From Manila, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture. Received July 19, 1919.

This Philippine species is becoming known in the United States through the shipments of nuts which have reached many of our large markets in recent years. It is described by P. J. Wester as a tree about 50 to 80 feet high, adapted to a moist climate with abundant rainfall.

"The fruit is black, smooth, and shining, and contains one seed, the 'pili nut,' inclosed in a fleshy husk which is edible when cooked. The nuts are oblong, triangular, and pointed at both ends; the kernel is of excellent quality. It is rarely cultivated. While the pili occurs in several other provinces, all the nuts marketed are obtained in Sorsogon, Albay, and Ambos Camarines." (*Philippine Agricultural Review*, vol. 9, p. 242.)

"Since the tree is strictly tropical in its requirements (so far as known), it probably will not succeed in the United States unless it be in extreme southern Florida. It should be tried in Porto Rico, Cuba, and other parts of the American Tropics." (*Wilson Popenoe*.)

47902 to 47910. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilissima* Pohl.)

From Port of Spain, Trinidad, British West Indies. Cuttings presented by Mr. W. G. Freeman, Acting Director of Agriculture. Received July 22, 1919.

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| 47902. "Maman l'enfant." | 47907. "No. 12." |
| 47903. "Manioc Sellier." | 47908. "No. 13." |
| 47904. "Mata Hotel." | 47909. "No. 14." |
| 47905. "Parasol." | 47910. "No. 15." |
| 47906. "Turkey Claw." | |

47911 to 47914.

From Buitenzorg, Java. Presented by the director, Plant Breeding Station. Received July 22, 1919.

- 47911 to 47913. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.**
47911. The ordinary form. 47913. Var. *rubra*.
47912. Var. *inermis*.

- 47914. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame.**
- A white-seeded variety.

47915. GOSSYPIMUM sp. Malvaceæ. Mexican tree cotton.

From Mexico. Presented by Dr. C. A. Purpus, Paso del Macho, Vera Cruz. Received July 22, 1919.

"Capsules of cotton grown here at an altitude of 3,000 feet. The cotton trees reach a height of 10 to 12 feet and flower and fruit throughout the year." (*Purpus*.)

47916. JATROPHA CURCAS L. Euphorbiaceæ.

From Madda, Yucatan, Mexico. Presented by Mr. Alberto Tacea. Received July 23, 1919.

"Seeds of this plant are usually regarded as purgative, yet in this locality they are eaten and are used for confectionery." (*Tacea*.)

47917. DAMMARA AUSTRALIS Lambert. Pinaceæ. Kauri pine

(*Agathis australis* Steud.)

From Auckland, New Zealand. Presented by Mr. J. W. Poynton. Received July 23, 1919.

A lofty forest tree, with a rounded, bushy head, usually ranging from 80 to 100 feet high, but it is often of greater size. The trunk varies in diameter from 4 to 10 feet, but occasionally attains 20 feet. The bark is glaucous-gray, falling off in large flat flakes. The sessile leaves are very thick and leathery. The cones are erect, almost spherical when ripe, and 2 to 3 inches in diameter; the broad, thin scales fall away from the axis at maturity. The tree is abundant in the northwestern peninsula of North Island, from sea level up to an altitude of 2,000 feet. The timber is not excelled by any other for the variety of uses for which it is adapted, and is remarkable for its strength, durability, and the ease with which it is worked. The resin, or *kauri gum*, so important for making varnish, is still dug in large quantities on the sites of previous forests, or obtained from those still living. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 645.)

For previous introduction, see S. P. I. No. 46387.

47918. MACADAMIA TERNIFOLIA F. Muell. Proteaceæ. Macadamia

From Sydney, Australia. Purchased from Anderson & Co. Received July 24, 1919.

"Nuts of the thin-shelled variety."

For previous introduction and description, see S. P. I. No. 44769.

47919 to 47925.

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received July 24, 1919. Quoted notes by Mr. Wester.

47919. CITRUS WEBBERII Wester. Rutaceæ.

"*Mangapug*. The largest known loose-skinned citrus fruit in the world. It is citron yellow, has 13 to 15 locules, very thin skin, and juicy flesh. It is eaten by the natives in Cotabato. This is apparently a rare form, for I saw no trees anywhere during my stay in Cotabato, although I went as far as to Fort Pikit in the interior. Nowhere did I see any signs of canker, though I was on the lookout for this disease."

47920. IPOMOEA NYMPHAEAEFOLIA Blume. Convolvulaceæ.

(*I. peltata* Choisy.)

Morning-glory

"*Burakan*. This is a most gorgeous vine with its immense leaves and masses of bright-yellow flowers."

The specific name was originally spelled *nymphaefolia* by Blume and was corrected to *nymphaeaeefolia* in *Index Kewensis*.

47919 to 47925—Continued.

47921. *IPOMOEA PES-CAPRAE* (L.) Roth. Convolvulaceæ. Morning-glory.
(*I. biloba* Forsk.)

A branching, glabrous, perennial vine with prostrate, succulent stems sometimes 60 feet long. The suborbicular leaves approach 4 inches in width and are notched at the apex. The funnelform flowers, about 2 inches long, are borne during summer and autumn in clusters on a stout peduncle. This is one of the most characteristic plants of the sea beaches of warm and tropical America. (Adapted from *Britton, Flora of Bermuda*, p. 300.)

- 47922 to 47924. *RUBUS* spp. Rosaceæ. Bramble.

"These brambles from high altitudes in northern Luzon may do well in Florida."

47922. *RUBUS* sp.

47924. *RUBUS* sp.

47923. *RUBUS* sp.

47925. (Undetermined.)

"*Buol*. This is a plumlike, yellow, acid fruit growing on a spiny, rather attractive shrub near the seashore in Davao and would probably make a good jelly or marmalade."

47926 and 47927. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.

From Dairen, Manchuria. Presented by Mr. A. A. Williamson, American consul. Received July 26, 1919.

These improved varieties have the advantage of containing more oil than other varieties and of being uniform in shape and size. They possess a very fine luster. Furthermore, the growing of these varieties is known to bring in about 15 to 20 per cent greater crop from the same area of land. (Adapted from *Commerce Reports*, March 14, 1919, p. 1232.)

47926. "*Shiheigai-hakka*. (*Ssupingkai*, white flower; or *Supingkai*, small bean.)"

47927. "*Kaigen-hakka*. (*Kaituan*, white flower; or *Kaiyuan*, small bean.)"

47928. *BRASSICA BESSERIANA* Andrz. Brassicaceæ. Mustard.

From Aden, Arabia. Presented by Mr. Addison E. Southard, American consul. Received July 28, 1919.

"Two kinds of mustard are grown in the Yaffai and Dthala districts of the Aden hinterland and in the Arabian Red Sea districts of Dubham, Shargah, Koraisha, Hojaria, and other places. These two kinds are known in Arabic as *khardal* (or *ghardal*) and *tartar*. The first-named variety yields but little oil, while the latter yields proportionately a good deal of oil. The clerk in this consulate was sent to canvass the Arab families in Aden and Sheikh Othman, with whom he has acquaintance, and succeeded in obtaining from the medicine chest of one old gentleman a few grams of the *khardal* (or *ghardal*) variety, which are herewith inclosed." (*Southard*.)

47929. ANACARDIUM EXCELSUM (Bert. and Balb.) Skeels. Anacardiaceae
(*A. rhinocarpus* DC.) [diaceae]

From New York, N. Y. Presented by H. P. Finlay & Co., Ltd. Received
July 28, 1919.

"Seeds, called *Mijagua*, that come from Venezuela, where they are used as a substitute for Indian corn in the feeding of hogs. These seeds are much cheaper than Indian corn in Venezuela." (*H. P. Finley*.)

A majestic tree, related to the cashew nut, found at altitudes ranging from sea level to 2,700 feet, in torrid regions. The wood, being hard and heavy, is worked with difficulty, but it is used in making boats and canoes. Fish are very fond of the fruit, and it is stated that in ancient times the Indians in Talamanca used the cut-up bark of this tree to stupefy the fish and thereby to catch them more easily. (Adapted from *Pittier, Plantas Usuales de Costa Rica*, p. 92.)

47930 to 47939.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received
July 28, 1919. Quoted notes by Mr. Wright.

47930. METROSIDEROS TOMENTOSA A. Rich. Myrtaceae.

"*Pohutukawa*. One of the most beautiful of flowering trees and very valuable as a bee plant; the honey made from this is of excellent flavor and is pure white. This tree, about 40 feet in height, is found on the hillsides, along the beach, and even grows out of the sides of the sea cliffs. In many cases, thriving trees grow just above high-water mark where the roots are frequently washed by the tide. Like *M. robusta*, it yields a hard wood which is used for making knees for boat building. Strange to say, *M. tomentosa* is found in the wild state only near the sea, although it grows well inland if protected from frost."

For previous introduction, see S. P. I. No. 42852.

47931. CITRUS SINENSIS (L.) Osbeck. Rutaceae. Sweet orange

"*Dunning's Seedless* (navel orange). Seedling, from the Washington Navel, grown in Queensland, Australia, where it is said to surpass the Washington Navel."

47932. PRUNUS CERASIFERA MYROBALANA (L.) C. Schneid. Amygdalaceae

"*Coffee's Myrobalan*. This variety we use for the working of European plums and prunes (*Prunus domestica*). They grow well and make a good union on it. It strikes almost as freely as a willow."

47933 and 47934. PRUNUS SALICINA Lindl. Amygdalaceae.

Japanese plum

47933. "*Patterson*. A Satsuma seedling, said to be the latest of plums (yellow flesh)."

47934. "*Purple King*. *Doris* × *Hale*. A large Japanese plum of incomparable beauty, having very firm flesh of good quality. The best of the Japanese section; it surpasses all the other plums in vigor."

47935. PRUNUS sp. Amygdalaceae.

Hybrid plum

"*Wilson's Early*. Said to be the earliest hybrid plum grown; an extra good shipper."

47930 to 47939—Continued.

47936. PRUNUS sp. Amygdalaceæ.

"*Precious*. Hybrid cherry plum. An early bearer and a heavy cropper."

47937. PRUNUS sp. Amygdalaceæ.

"*Early Jewel*. Hybrid Japanese plum. An early plum resembling *October Purple*."

47938. PRUNUS sp. Amygdalaceæ.

"*Morrison's Stock*. Used for the working of Japanese and hybrid plums (not for European). These plums grow very strong on it; and cuttings strike readily, provided they are not planted too late. This variety flowers, but never fruits."

47939. PYRUS sp. Malaceæ.

Pear.

"*Corona*. *Bartlett* × *Beurre Clairgeau*. Good in quality and very handsome; should make a great commercial variety."

47940. BAUHINIA sp. Cæsalpiniaceæ.

Plants grown at the Yarrow Plant Introduction Field Station, Rockville, Md., from seeds collected by Dr. J. N. Rose, associate curator, National Herbarium. Numbered for convenience in recording distribution.

"No. 22119. August, 1918. This plant was very common on the dry hills above Huigra, Ecuador, associated with cacti, fourcroya and other semiarid plants. It forms a small round bush, about 3 to 4 feet high, with the characteristic 2-lobed leaf of the Bauhinia. The flowers are borne in small clusters of fours or fives and suggest, in a way, small red-flowered fuchsias. The calyx is cut on one side and is pushed off the petals like a spathe. The petals, which are nearly an inch long, are spread only a little at the tip and at first suggest a tubular flower. The plant was seen nowhere else, although it was quite common at Huigra at an altitude of about 4,000 feet. The flowers are so attractive that we believe it might prove a valuable addition to our ornamentals, especially in the semiarid region of the Southwestern States." (Rose.)

47941. TRITICUM AESTIVUM L. Poaceæ.

Common wheat.

(T. vulgare Vill.)

From Algiers, Algeria. Presented by Dr. L. Trabut. Received August 5, 1919.

"*Fritissi* wheat; harvested south of Tuggurt, Algeria, April, 1919." (Trabut.)

"Probably a club wheat of the common type." (C. E. Leighty.)

47942. ALEURITES TRISPERMA Blanco. Euphorbiaceæ. Banucalag.

From Mayaguez, Porto Rico. Presented by Mr. D. W. May, Porto Rico Experiment Station. Received August 5, 1919.

"You sent us in 1909 seed of *Aleurites trisperma*, under S. P. I. No. 26050. This introduction is producing more seed than *A. fordii* or *A. moluccana*, and I am sending you a bag of it. The plant grows well with us and the seed is easily gathered." (May.)

47943 to 47945. ZEA MAYS L. Poaceæ.**Corn.**

From Rio de Janeiro, Brazil. Presented by Capt. Amilcar A. B. Magalhaes.
Received August 5, 1919.

"These ears which we are sending you were obtained here, in the State of Rio de Janeiro, from seeds distributed by this Commission and brought from Matto Grosso to the Corn Exposition held in this capital in 1918. This product is not a perfect reproduction of the original, it being apparent that some kernels have suffered from the influence of common corn which the farmer planted very close to the plat allotted to the pure seed. These kernels are distinguished by a hardness which shows in the external parts, while the indigenous corn, richer in cornstarch, is normally soft, even after drying, as is shown in most of the kernels.

"The ears of indigenous corn have fewer kernels on the cob, but the kernels are more perfect than those on the ear sent you at this time."

47943. Kernels red.

47945. Kernels yellow.

47944. Kernels white.

47946 and 47947. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

From Fresno, Calif. Presented by Mr. A. C. Jewett. Received August 7, 1919.

"Two varieties of Afghan melons which mature very late in the fall. They are very superior to the common run of melons." (*Jewett.*)

47946. No. 1.

47947. No. 2.

47948. PARKIA TIMORIANA (DC.) Merr. Mimosaceæ.**Cupang.**(*P. roxburghii* Don.)

From Zamboanga, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser. Received August 8, 1919.

"A handsome timber tree, the seeds of which are roasted and used for coffee." (*Wester.*)

47949. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.(*Prunus davidiana* Franch.)**Peach.**

From Dundee, Ill. Presented by the D. Hill Nursery Co., who purchased them from the Yokohama Nursery Co., Yokohama, Japan. Received August 9, 1919.

Seeds of the *davidiana* peach, part of a shipment for stock purposes from Japan by the D. Hill Nursery Co., Dundee, Ill. The seeds presumably came from China. So far as the United States Department of Agriculture is informed, this is the first commercial introduction of *davidiana* peach pits into the United States.

47950. PRUNUS MUME Sieb. and Zucc. Amygdalaceæ.**Japanese apricot.**

From Yokohama, Japan. Purchased from the Yokohama Nursery Co., Ltd. Received at Chico, Calif., August 30, 1919.

Introduced for the use of specialists in the Department.

For previous introduction, see S. P. I. No. 46694.

47951. SOLANUM QUITOENSE Lam. Solanaceæ. Naranjilla.

From Guayaquil, Ecuador. Presented by Dr. H. R. Carter, assistant surgeon general, United States Marine Hospital, Baltimore, Md., who obtained them from Dr. M. E. Connor, Guayaquil. Received August 9, 1919.

"The fruit of the naranjilla is about the size of a mandarin orange; it is orange-yellow, but not flattened as much as the mandarin. The interior resembles that of a tomato or eggplant. I was told by Mr. Elizade, secretary of state of Ecuador, that it grew in the warm countries near Quito, i. e., at a lower altitude; and I feel reasonably sure that I saw a growing plant in the barren country on the upper Magdalena near Girardot, Colombia, but having no opportunity to examine it I am not positive. This plant resembled a large eggplant, 4 to 5 feet high, and was covered with fruit, some yellow and some green. I am told by the same man that it fruits when young, i. e., the first season; and from what I heard I thought it might do so from Thomasville, Ga., southward, and in southern California. The fruit, which ripens in July, is too acid to be eaten out of hand, although I liked it, but it is used as a flavor for frescos (soft drinks) and ice cream." (*Carter.*)

47952 to 47954.

From Vereeniging, Transvaal. Presented by Mr. J. Burt Davy. Received August 11, 1919.

47952. AGATHOSMA CHORTOPHILA Eckl. and Zeyh. Rutaceæ.

"Leaves of various species of *Agathosma*, of the Cape region, are used like buchu, but are of a more delicate and agreeable odor." (*National Standard Dispensatory*, 1905, p. 1335.)

47953. BAROSMA BETULINA (Bergius) Bartl. and Wendl. Rutaceæ.**Buchu.**

The honey buchu, a branching, evergreen shrub, the best variety of buchu, is found on South African mountain slopes in red sandy loam, at altitudes between 1,000 and 2,000 feet. It is bushy and compact and reaches a height of 3 to 4 feet, though it may grow taller. On account of the starlike purple flowers this plant compares favorably, as an ornamental, with the gardenia and camellia. The small light-green leaves are smooth and leathery and are covered on each surface with oil glands. A greenish yellow oil is extracted from the leaves by using alcohol or boiling water. When exposed to cold, the oil deposits a solid barosma camphor which, when purified, has the odor of peppermint. The leaves are harvested by clipping the twigs at the beginning of March. The oil content is highest in January and February, but the seeds are then still on the plants and clipping at this time would result in their loss for propagating purposes. In clipping, care is taken to have a sufficient number of buds for the next year's growth. Leaves of one year's growth are far superior to those 2 years old. They are astringent and contain a bitter substance which acts beneficially on the stomach. The Hottentots and Bushmen use a solution of the leaves for bladder and kidney complaints, and the roots for snake bites. (Adapted from *The Agricultural Journal of the Union of South Africa*, vol. 6, p. 80, and *The Agricultural Journal, Cape of Good Hope*, vol. 6, p. 147.)

47952 to 47954—Continued.**47954. BAROSMA CRENULATA (L.) Hook. Rutaceæ.****Buchu.**

The large-leaved buchu, the kind most esteemed in the colony, although not the highest priced in London, is often distinguished as the "true buchu." It is a twiggy shrub, 3 to 4 feet high, with smooth purplish branchlets and leaves 1 to 1½ inches long. The pale purplish flowers, produced in October and November, are very plentiful and last for a long time. The uses are the same as those of *B. betulina*. (Adapted from *The Agricultural Journal, Cape of Good Hope*, vol. 6, p. 147.)

47955. PARTHENIUM ARGENTATUM A. Gray. Asteraceæ. Guayule.

From Saltillo, Mexico. Presented by the Cia. Explotadora de Caucho Mexicano, through Mr. H. C. Morgan, American consul. Received August 11, 1919.

"Seeds from the guayule plant, which yields a certain kind of commercial rubber. The seeds were collected from this year's flowers." (*Morgan.*)

47956. ACHRADELPHA MAMMOSA (L.) O. F. Cook. Sapotaceæ.*(Lucuma mammosa Gaertn.)***Sapote.**

From San Jose, Costa Rica. Presented by Mr. Carlos Wercklé, through Mr. José C. Zeledon. Received August 12, 1919.

"Few other fruits are of such importance to the natives of Mexico and Guatemala as the sapote, which grows wild in the forests of Guatemala, Tabasco, and Chiapas. It is often cultivated, but much of the fruit consumed in these regions is gathered from wild trees. Elsewhere in tropical America it is planted in gardens, notably in Cuba, where it is a favorite fruit. The Central American common name, *zapote* (spelled sapote in English), is taken from the Aztec *tzapotl*, a generic name applied by the ancient Mexicans to all soft sweet fruits. In Cuba it is called *mamey sapote* and *mamey colorado*.

"The sapote becomes a large tree, sometimes attaining 80 or 90 feet in height. It thrives only in regions where the climate is warm and rather moist; it can not stand the cold winters of California, and for some reason it has not succeeded in southeastern Florida, although it is apparently not the cold that interferes with its growth in the latter region. The fruits are the size of small muskmelons, but elliptic in form; they have a rough russet-brown outer covering about an eighth of an inch thick, salmon-colored or reddish flesh that is soft, melting, sweet, and of rich flavor, and a single large, elliptic, glossy-brown seed. A poor sapote resembles a squash in taste, but a good one is rich and pleasant flavored. The fruit is eaten fresh, or made into jam, or frozen to form a sherbet." (*Wilson Popenoe.*)

47957. CASIMIROA sp. Rutaceæ.

From Los Angeles, Calif. Budwood presented by Mr. Milo Baker. Received August 21, 1919.

"Budwood from a tree grown from a cutting received from Central America some years ago and budded into a white sapote tree. This budded tree is fruiting this year for the second time. The fruit is practically seedless and about the size of a smallish apple; the entire fruit is edible and very rich. The tree seems to be a vigorous grower and a prolific bearer." (*Baker.*)

"The cuttings received are more pubescent than those of the common *Casimiroa edulis* (the white sapote), and I suspect they belong to one of the other

species of this genus, probably *C. sapota* or *C. tetrameria*. It is not rare for *C. edulis* to produce seedless fruits, and, so far as I know, the other species of *Casimiroa* produce fruits much like those of *C. edulis* in character." (*Wilson Popenoe*.)

For an illustration of a seedless white sapote, see Plate II.

47958. OLEARIA FURFURACEA (A. Rich.) Hook. f. Asteraceæ.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received July 28, 1919.

A freely branching shrub or small tree, 6 to 20 feet high, native to the North Island of New Zealand. The alternate leaves, 2 to 4 inches long and 1 to 2 inches broad, vary in shape from oblong to broadly ovate. They are coriaceous, green above, and clothed below with a dense silvery tomentum. The small heads of white flowers are borne in large, much-branched corymbs on long, slender peduncles. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 284.)

47959 to 47962.

From Georgetown, Demerara, British Guiana. Presented by Mr. J. B. Harrison, director, Science and Agriculture, Department Botanic Gardens. Received August 18, 1919.

47959. ANAXAGOREA BREVIPES Benth. Annonaceæ.

"*Black yarri-yarri*." A tree with yellow, medium-hard wood which is used for fishing rods. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 99.)

47960. CHRYSOBALANUS ICACO L. Rosaceæ.

ICACO.

"*Kulimiro*." A small tree lining the banks of the Kaituma River, adjacent to the savanna region. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47961. CLIBADIUM SYLVESTRE (Aubl.) Baill. Asteraceæ.

"*Kunami*." A shrub which is ground up and made into pellets for poisoning fish. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 102.)

47962. OCOTEA RODIEI (Schomb.) Mez. Lauraceæ.

"*Bibiru, Greenheart*." A well-known tree which grows to a large size. The wood is used for wharf piles, in shipbuilding, and other constructional work. (Adapted from *Journal of the Board of Agriculture of British Guiana*, vol. 11, p. 106.)

**47963. LIMONTIUM BRASSICAEFOLIUM (Webb) Kuntze. Plumbagina-
(*Statice brassicaefolia* Webb.) [cæ.**

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 18, 1919.

A subshrubby plant, 1½ feet high, native to the Canary Islands. The obovate leaves have sinuate margins. The branches are 2-winged, with the wings very broad; the branchlets are 3-winged. The spikelets are 2-flowered, 2 to 3 fascicled, at the ends of the branches; the calyx is purple, with glabrous tube and denticulate margin; the corolla is yellowish white. (Adapted from *Curtis's Botanical Magazine*, pl. 5162.)

47964. ORYZA SATIVA L. Poaceæ. Rice.

From Vercelli, Italy. Presented by Dr. Novello Novelli, director, R. Stazione Sperimentale di Riscoltura e delle Coltivazioni Irrigue. Received August 21 and 26, 1919.

"*Precoce dellarole.*"

Procured for the use of the rice specialist of the Bureau of Plant Industry.

47965 to 47967.

From Belem, Para, Brazil. Presented by Dr. J. Simão da Costa. Received August 22, 1919.

47965. OENOCARPUS BATAUA Mart. Phœnicaceæ. Palm.

A tall, majestic tree with a large smooth trunk, generally distinctly ringed; the leaves are terminal, pinnatisect, with linear segments; the spadices spring from beneath the leaves and are simply branched; the spathe is large, fusiform, and woody and falls off as soon as the spadix escapes from it; the flowers are monœcious, and the fruit is nearly globular, 1-seeded, with an edible covering. All species of this genus afford oil and "yukissé" (palm-drink) from the fruits, and they are also used for various other purposes. The leaves serve as a thatch, and from the nerves of the decayed petioles the Indians make arrows for their blow-pipes. The oil is colorless and sweet and excellent not only for lamps but for cooking. The shopkeepers of Para buy these oils of the Indians and mix them in equal proportions with olive oil, retailing the whole as olive oil, from which indeed it can scarcely be distinguished even by the best judges. For frying fish this oil is equal either to olive oil or butter. Native to the Amazon Valley at an altitude of not more than 1,600 feet above the level of the sea. (Adapted from *Seemann, Popular History of the Palms*, p. 270.)

47966. VIROLA SEBIFERA Aubl. Myristicaceæ. Ucuúba.

"A tree inhabiting the lowlands of the Lower Amazon, which produces in June and July a fruit about the size of a cherry with a brown paper-thin shell. This fruit contains an abundance of oil and stearin, and since each tree produces about 2 barrels of nuts a week during the fruiting season, there seems to be here a promising source of soap material. The timber also is valuable, being hard and dense and reddish brown in color, almost like mahogany." (*Lange, Lower Amazon*, pp. 34, 407, 467.)

47967. VOUACAPOUA AMERICANA Aubl. Fabaceæ.
(*Andira excelsa* H. B. K.)

"A tree found in the lower Amazon region, which yields timber of excellent quality. It is also called Amazon wood." (*Lange, Lower Amazon*, pp. 88, 461.)

47968 to 47972.

From Puerto Bertoni, Paraguay. Presented by Dr. Moises S. Bertoni. Received August 22, 1919. Quoted notes by Dr. Bertoni.

47968. BRITOA SELLOWIANA Berg. Myrtaceæ.

"Native name in Guarani, *Nyandu-apihsa*; in Portuguese, *Siete Capotes*. A well-known little fruit tree, very productive."

47968 to 47972—Continued.

47969. *CYPHOMANDRA* sp. Solanaceæ. Tree-tomato.

"Said to be edible."

47970. *EUGENIA* sp. Myrtaceæ.

"Native name in Guarani, *Anyangapirih-apua*. A species with round cherry-colored fruit; a low shrub, very resistant to cold; fruit good."

47971. *MANIHOT TWEEDIEANA* Muell. Arg. Euphorbiaceæ.

"Native name in Guarani, *Gwasú-mandió*. The Indians claim that by subjecting this species to annual cultivation, in a few years they obtain an edible variety."

47972. *SOLANUM CHACOENSE* Bitter. Solanaceæ. Potato.
(*S. tuberosum guaraniticum* Bertoni.)

"The tubers, thicker than those of *S. commersonii*, have a strong and somewhat potatolike flavor and are not usually eaten. But, under cultivation, there appear at times edible tubers with a potato flavor; this happens also sometimes in the wild state, but as an unstable variation, according to my results. It is a plant worth studying, especially by crossing with the common potato, for in this region it is not attacked by any disease or insect; it produces two or three times a year; and it thrives in dry and rather poor soils where the common potato is not resistant."

47973. *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceæ.

From Ventimiglia, Italy. Presented by the director, La Mortola Botanic Gardens. Received August 25, 1919.

An Australian tree 30 to 40 feet high, with slender branches, staminate flowers in slender spikes, and globular fruiting cones not more than a third of an inch in diameter. The wood is dark colored, close grained, and prettily marked. (Adapted from *F. M. Bailey, Queensland Flora, pt. 5, p. 1491.*)

"This species has proved hardier in the Everglades of Florida than *C. equisetifolia* and appears to be a much handsomer form." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 44532.

47974. *CASSIA ANGUSTIFOLIA* Vahl. Cæsalpiniaceæ. Senna.

From Tangier, Morocco. Presented by M. Jules Goffart. Received August 25, 1919.

This plant is one of the sources of the drug known as senna. It is grown extensively in India and Arabia. Watt in his *Commercial Products of India* says of its culture: "It is sown on red or black clay loams, fairly liberally ploughed and manured, the sowing being in May. Weeding has to be attended to, but irrigation is hardly if ever necessary. The season for collecting the leaves is June to December. The yield is said to be 1,000 pounds an acre, which allows a handsome margin for profit."

47975 to 47983.

From St. Vincent, Cape Verde Islands. Collected by Dr. H. L. Shantz. Received August 26, 1919. Quoted notes by Dr. Shantz.

47975. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

"(No. 5. St. Vincent. July 29, 1919.) Pigeon-peas from market; said to be grown on San Antonio, the island north of St. Vincent. Mixed; the size of a small pea."

47975 to 47983—Continued.**47976. CITRUS LIMONIA** Osbeck. Rutaceæ.**Lemon.**

"(No. 2. St. Vincent. July 29, 1919.) Lemon budwood. Only a few grown on this island; only a few trees seen."

47977 and 47978. DOLICHOS LABLAB L. Fabaceæ.**Bonavist bean.**

47977. "(No. 9. St. Vincent. July 29, 1919.) Beans from the market, grown on San Antonio. Brown, with large admixture of black and variegated forms."

For an illustration of this bean as it grows in Florida, see Plate III.

47978. "(No. 8. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. Dull white."

47979 to 47982. PHASEOLUS LUNATUS L. Fabaceæ.**Lima bean.**

47979. "(No. 6. St. Vincent. July 29, 1919.) Beans from market. Large flat; white or white and red. Grown on San Antonio."

47980. "(No. 7. St. Vincent. July 29, 1919.) Beans from market, grown on San Antonio. White; looks like a bush Lima."

47981. "(No. 10. St. Vincent. July 29, 1919.) Beans from market. Red. All beans in the market are mixed. Grown on San Antonio."

47982. "(No. 10A. St. Vincent. July 29, 1919.) Beans from market. Grown on San Antonio. Mottled."

47983. TAMARINDUS INDICA L. Cæsalpiniaceæ.**Tamarind.**

"(Nos. 4 and 13. St. Vincent. July 29, 1919.) Tamarind fruits from the largest tree on the island. Flowers and ripe fruits at the same time. Used to make a drink by putting the fruit in water (like lemonade)."

47984 to 47986. TRITICUM AESTIVUM L. Poaceæ.*(T. vulgare* Vill.)**Common wheat.**

From Sydney, New South Wales. Presented by Mr. George Valder, under secretary and director, Department of Agriculture. Received August 27, 1919. Quoted notes by Mr. Valder.

47984. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 1 early strain) from Bathurst Experiment Farm."

47985. "Crossbred wheat (fixed). *Dreadnaught* × *Cleveland* × *Rymer* × *Bunyip* (No. 2 early strain) from Bathurst Experiment Farm."

47986. "*Sutton's Sensation* from Bathurst Experiment Farm."

47987 and 47988.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, Middle Egypt Botanic Station. Received August 27, 1919. Quoted notes by Mr. Bircher.

47987. EUGENIA PUNGENS Berg. Myrtaceæ.**Guabiyu.**

"A bush from South America, with pungent leaves and myrtlelike-flowers. The black fruits, generally in pairs, are about an inch across and contain a sweet yellow flesh which incloses one or two large green seeds. Although the fruit, at present, is insipid in flavor, it might be improved by culture."

For previous introduction, see S. P. I. No. 45108.

The fruits of this species are illustrated in Plate IV.



GATHERING BONAVIST BEANS IN SOUTHERN FLORIDA. (DOLICHOS LABLAB L., S. P. I. No. 47977.)

The bonavist bean is a perennial rank-growing species which forms a satisfactory ground cover in orchards. It produces its pods clustered on short erect stalks which project above the foliage, making them easy to gather. Its beans, both when young and green and when dried, are an excellent vegetable which deserves to be known in all frostless regions where the plant will grow. (Photographed by David Fairchild, Miami, Fla., February 11, 1919; P25266.)



THE GUABIYU, AN EXCELLENT FRUIT RELATED TO THE GUAVA. (EUGENIA PUNGENS BERG., S. P. I. No. 47987.)

The guabiyu is a Paraguayan shrub, is sufficiently hardy to grow out of doors in California and Florida, and is of attractive appearance. Its purplish black fruits, generally produced in pairs, are very juicy and of pleasant subacid flavor. Very few of the little-known myrtaceous fruits are of such good quality as this. (Photographed by E. L. Crandall, from fruits sent in by P. D. Barnhart, Sawtelle, Calif., October 16, 1917; P20878FS.)

47987 and 47988—Continued.

47988. *EUGENIA SUPRA-AXILLARIS* Spring. Myrtaceæ.

"A glossy-leaved evergreen shrub from eastern Brazil, which bears clusters of white flowers and black, globose, 1-seeded fruits in clusters of 3 to 10. The fruits are about the size of small cherries and somewhat resemble juniper berries in flavor."

For previous introduction, see S. P. I. No. 45109.

47989 to 47994.

From Gwelo, Southern Rhodesia. Presented by Mr. J. Burt Davy. Received August 30, 1919. Quoted notes by Mr. Davy.

47989. *BAIKIAEA* sp. Cæsalpiniaceæ.

"*M'Saasa*, a tall evergreen tree, with a straight trunk, characteristically dominant over considerable areas of the midlands of Mashonaland, Rhodesia, forming fairly thick forests. The bast fiber is very strong and is regularly used by natives for making game nets and for other purposes requiring great strength. These seeds were collected from a tree in Umvuma, where the summer rainfall is 25 inches."

47990. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

"A rapidly growing ornamental shrub from Umvuma, Mashonaland, useful for a quick cover to prevent erosion and at the same time to add nitrogen to the soil."

47991. *COMBRETUM* sp. Combretaceæ.

"A small tree, yielding a rubber in quantity. This tree was growing on a magnesian dike on the Rhodesdale Ranch, Umvuma, Mashonaland, where the summer rainfall is 25 inches and the winters dry. The tree is plentiful, but only one was seen bearing fruit."

47992. *Gossypium* sp. Malvaceæ.

Cotton.

"A wild cotton from Melsetter, Mashonaland, July, 1919."

47993. *HEERIA* sp. Anacardiaceæ.

"A small evergreen tree growing on a magnesian dike, on the Rhodesdale Ranch, Umvuma, Mashonaland, July 11, 1919."

Received as *Anaphrenium* sp. This genus is now referred to *Heeria*.

47994. *SECURIDACA LONGIPEDUNCULATA* Fres. Polygalaceæ.

"*Violet tree*. A small evergreen, with a strong bast fiber and ornamental, violet-colored flowers. It is growing on the Rhodesdale Ranch, Umvuma, where the summer rainfall is 25 inches."

47995. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From St. Croix, Virgin Islands. Cuttings presented by Dr. Longfield Smith, Agricultural Experiment Station. Received September 2, 1919.

"S. C.-12/4. We are getting splendid results here with this cane. We now have over 100 acres planted on this island. Plantations which have trial areas report from 25 per cent up to 90 per cent more sugar per acre than from standard cane." (*Smith*.)

47996. BROSIMUM ALICASTRUM Swartz. Moraceæ. Breadnut tree.

From Ojitas, Yucatan, Mexico. Presented by Mr. E. H. Thompson, through Mr. George Totten, jr., Washington, D. C. Received September 4, 1919.

"Two quarts of *ramon* [breadnut] seed, from a fine tree. The leaves of the *ramon* tree form the principal source of fodder for the cattle of Yucatan." (Totten.)

47997 and 47998.

From Bogota, Colombia. Presented by Mr. M. T. Dawe. Received September 8, 1919.

47997. ASTROCARYUM sp. Phœnicaceæ.**Palm.**

"In my recent journeys I came across a palm known as *guere*. It is found in the forests of the Darien country and grows from sea level to altitudes of about 400 meters. The palm is about 10 meters in height and bears large hanging racemes of scarlet-colored fruits, the nuts of which yield a useful oil." (Dawe.)

47998. PRIORIA COPAIFERA Griseb. Cæsalpiniaceæ.

"Seeds of the *cativo* tree. This tree is abundant in the Gulf of Uraba and yields a resin known locally as 'cativa,' which is used for calking boats. I understand that the tree is also found in the Canal Zone, so it, or its product, is probably well known. I may mention that the tree is very abundant in the lowlands of this country and that the resin could be obtained in very large quantities should it possess any commercial value." (Dawe.)

47999. ERYNGIUM FOETIDUM L. Apiaceæ.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino. Received September 8, 1919.

A wild herbaceous plant, widely distributed throughout the West Indies and South America, which, because of its very agreeable odor, is used as a condiment in Cuba and Porto Rico. In the former country it is especially popular as a green dressing with "Pescado a la isleña," literally, "fish a la Canaries." An infusion of the plant is considered efficacious as a febrifuge. (Adapted from *Revista de Agricultura, Comercio y Trabajo, Cuba*, vol. 2, p. 343.)

48000. MYRICA RUBRA Sieb. and Zucc. Myricaceæ.

From Del Monte, Calif. Presented by Mr. T. Lee, Hotel del Monte, from trees grown at Del Monte. Received September 10, 1919.

"*Yang mei*. The beautiful dark-purple fruits are the size of crab apples and can be eaten out of hand, made into compotes, pies, sirup, and wine. There is great variation in the habit and productivity of the trees, and also in the color, size, and taste of the fruits. The trees are evergreen and thrive best in well-drained rocky terraces. The localities that will best suit them in the United States will probably be the southern sections of the Gulf Coast States and the milder parts of California." (Frank N. Meyer.)

48001 to 48011.

From Buitenzorg, Java. Presented by Dr. P. J. S. Cramer, chief, Plant Breeding Station. Received September 12, 1919. Quoted notes by Dr. Cramer.

48001 to 48010. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. Oil palm.

"I am mailing 13 boxes of seeds of *Elaeis guineensis*, which were collected from trees grown in our garden at Sumatra."

This palm is very important economically. The fruit is used by the natives for food, the leafstalks and leaves for thatching houses, and the fleshy outer layer and kernels of the fruit each yield a commercial oil—that from the fleshy part being the ordinary palm oil used in the manufacture of soap and candles and that from the kernels being the white or nut oil used for making margarine or artificial butter. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 538.)

48001. "Banga K from tree 46 I, which was grown from seed imported from Kamerun."

48002. "Banga K from tree 47 I, which was grown from seed imported from Kamerun."

48003. "Banga K from tree 54 I, which was grown from seed imported from Kamerun."

48004. "Banga K from tree 55 I, which was grown from seed imported from Kamerun."

48005. "Denden 7 from tree 46 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48006. "Denden 7 from tree 54 II, which was grown from seed imported from Sao Thome Island, Portuguese West Africa."

48007. "Nsombo C from tree 43 II, which was grown from seed imported from the Belgian Kongo."

48008. "Nsombo D from tree 23 II, which was grown from seed imported from the Belgian Kongo."

48009. "Nsombo D from tree 24 II, which was grown from seed imported from the Belgian Kongo."

48010. "Nsombo D from tree 59 II, which was grown from seed imported from the Belgian Kongo."

48011. MIMUSOPS KAUKI L. Sapotaceæ.

"Seeds of *Mimusops kauki* with big fruits. The taste resembles very much that of *Achras zapota*, but the fruit is not eaten very often by Europeans; it is a tree that likes to grow near the sea."

48012. COIX LACRYMA-JOBI L. Poaceæ.**Job's-tears.**

From Rio de Janeiro, Brazil. Presented by Mr. T. R. Day, through Mr. Augustus I. Hasskarl, American vice consul, Rio de Janeiro. Received September 10, 1919.

"*Lagrimas de Nossa Senhora* (tears of Our Lady). This plant is a vigorous grower and produces, under almost any local conditions, great crops of excellent forage. It reaches a height of 10 feet or over, and a single plant often produces 40 to 50 shoots. The yield in green forage under favorable conditions runs very high, from 10 to even 20 tons to the acre, and the yield of grain is also very heavy. The seeds are very hard and if allowed to mature require crushing or grinding before feeding. Possibly the most important use of this plant

is for soiling—cutting four or five times during the year. The plant stools well, continually sending up new shoots or stems, and lasting, in Brazil, for some years. In temperate climates it would be an annual, as are teosinte and maize. Its favorite habitat is a low moist or even marshy soil, but it will grow successfully in dry soil, or luxuriantly in very wet localities, or even in water." (*Day.*)

For previous introduction, see S. P. I. No. 47617.

48013. PRUNUS SUBCORDATA Benth. Amygdalaceæ.

From Klamath Falls, Oreg. Presented by Mr. Elmer Applegate. Received September 15, 1919.

Obtained for experimental purposes for Department experts.

48014. JUGLANS CATHAYENSIS Dode. Juglandaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received September 15, 1919.

"*Juglans cathayensis* is said to grow 70 feet tall, but it does not show any tendency to be arborescent here. Our plants, which were received from the Arnold Arboretum in 1911, are about 10 years old, 8 feet tall, and bushy in habit. They began bearing 2 years since. The nuts germinate readily." (*Dunbar.*)

48015 to 48017.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received September 18, 1919.

48015. BERBERIS PRUINOSA Franch. Berberidaceæ.

Barberry.

A robust evergreen shrub, probably 10 feet or more in height, native to southwestern China. Its leaves are of leathery texture, up to 2½ inches long, lustrous green above, often grayish beneath, not unlike in general appearance those of the Himalayan *Berberis aristata*. It gets its name from the rich pruinose (or plum-colored) bloom that covers the fruits. (Adapted from *Gardeners' Chronicle*, vol. 54, p. 336.)

48016. CARAGANA AMBIGUA Stocks. Fabaceæ.

Shinaluk. A subshrubby leguminous plant, with large conspicuous flowers that are said to be eaten by the natives of Baluchistan, whence this plant comes. It is said to be found at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Journal of Botany*, vol. 4, p. 145.)

48017. CARAGANA MICROPHYLLA Lam. Fabaceæ.

Altavana.

Variety *crasse-aculeata*. Distinguished from the typical form of *C. microphylla* by its strong spines, which in reality are thickened stipules from the base of the rachis, and by its beautiful foliage, which is more abundant, glabrous, and persistent than in the typical form. A vigorous variety of this highly polymorphic species. (Adapted from *Fruticetum Vilmorinianum*, p. 57.)

48018 and 48019. TRIFOLIUM REPENS L. Fabaceæ.

White clover.

From Reading, England. Purchased from Sutton & Sons. Received September 19, 1919.

Introduced for experimental work by specialists of the Department of Agriculture.

48018. "White, or Dutch."

48019. "Wild White (Kentish)."

48020. RHEUM sp. Polygonaceæ.**Rhubarb.**

From Durban, Natal, Africa. Roots purchased from R. Mason & Son through Mr. William W. Masterson, American consul. Received September 20, 1919.

"A kind of garden rhubarb that is grown here, which will be a valuable introduction if similar results can be obtained with it in America. This rhubarb in the early spring (October here) is tender and crisp and is used extensively for the table. Unlike our rhubarb, which soon becomes fibrous and tough, this rhubarb lasts about seven months and is as good during that time as when it first came on the market in the spring. I do not know whether this difference is caused by the climate, soil, or other local reasons, or whether it is another kind of rhubarb. I only know it is delicious, is invariably good and tender, and lasts over half the year." (*Masterson.*)

48021. PHASEOLUS COCCINEUS L. Fabaceæ. Scarlet Runner bean.

From Chile. Presented by Mr. Hudson Maxim, Landing, N. J. Received September 23, 1919.

"Chile beans which I obtained from a member of the Du Pont Company who traveled in Argentina and Chile. These beans grow in a wet district at a high altitude in the Andes and are very frost resistant. From early August until the ground freezes in the fall one may have the very best of string beans from this variety, and the large juicy pods, which are borne most prolifically, may be eaten even after they have been pretty well filled with seeds. By the latter part of August the beans are large enough to be used as Limas, and they are superior to any that I know. The plants want very rich soil and an abundance of water and climbing space; they reach a height of 20 feet or more. The dry beans are hard, plump, and glossy." (*Maxim.*)

48022. BETA VULGARIS L. Chenopodiaceæ.**Sugar beet.**

From Naarden, Holland. Presented by Kuhn & Co., through Mr. Joseph W. Pincus. Received September 30, 1919.

Introduced for variety tests being carried on by Department specialists. The following table shows results of experimental tests with this variety:

Location of test.	Sugar in the beet.	Yield per acre.	
		Beets.	Sugar.
	<i>Per cent.</i>	<i>Pounds.</i>	<i>Pounds.</i>
Bohemia.....	19.37	35,543	6,885
Zeeland, Holland.....	16.93	39,677	6,717

48023. RUMEX ABYSSINICUS Jacq. Polygonaceæ.

From Loanda, Angola, Portuguese West Africa. Presented by Mr. John Gossweiler, Servicos de Agricultura. Numbered September 16, 1919.

"This Rumex has proved a most interesting plant, reaching a height of 7 to 8 feet in one season and yielding, from the first of June all through the summer, an abundance of succulent green leaves that make an excellent substitute for spinach. It promises to be an excellent plant for our Southern States, where summer green-leaved vegetables are very scarce." (*Peter Bisset.*)

48024 to 48034.

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received September 18, 1919.

48024. ACER CAMPBELLII Hook. f. and Thoms. Aceraceæ. **Maple.**

A large deciduous tree, with smooth gray bark; the chief maple of the northeast Himalayas at altitudes above 7,000 feet. The growth is moderate, and the grayish white wood is fairly hard, shining, and close grained. It is used extensively for planking and for tea boxes. This tree plays an important part in the regeneration of the hill forests, because it reproduces freely either by seed or coppice. (Adapted from *Gamble, Manual of Indian Timbers, p. 100.*)

48025. BOMBAX MALABARICUM DC. Bombacaceæ. **Silk-cotton tree.**

Ngu or *red silk-cotton tree*. A silk-cotton tree, common in the northern provinces of Siam. The tree may attain a height of 160 feet or more and a girth of 8 feet. The trunk and branches are thorny and the flowers are red. It grows in far larger numbers in the jungle than near the villages, for the most part spontaneously. As soon as the fruit reaches maturity it is gathered. A tree about 65 feet high yields on the average 3,000 to 6,000 pods. If by chance these are left too long upon the tree, the shell bursts and the seeds, together with the silk cotton that surrounds them, drop out. The cotton obtained from this tree is yellowish white and almost as fine and glossy as silk. (Adapted from *Commerce Reports, July 20, 1914, p. 378.*)

48026. CASUARINA DEPLANCHEANA Miquel. Casuarinaceæ.

A tree or shrub, native to New Caledonia, with whorled, erect, somewhat stout branches. Its wood is very heavy and durable, excellent for turners' and wheelwrights' work. The natives use it to make their war clubs and tomahawks. (Adapted from *DeCandolle, Prodromus, vol. 16, pt. 2, p. 342*, and *Annales du Musée Colonial de Marseille, 2d ser., vol. 9, p. 236.*)

48027. CENTAUREA RAGUSINA L. Asteraceæ.

"A round bush, sometimes nearly 6½ feet across, which grows best in a vertical position on rocks or walls and is then strikingly effective. Native to Crete and Dalmatia." (*Proschowsky.*)

48028. CORONILLA GLAUCA Jusl. Fabaceæ.

Sea-green or *day-smelling Coronilla*. A small round bush with beautiful glaucous-green foliage and pure-yellow flowers. This very ornamental shrub, native to southern France, remains almost constantly in bloom in a greenhouse and is admirably adapted for use in bouquets. The flowers are remarkably fragrant by day and almost scentless at night. (Adapted from *Curtis's Botanical Magazine, pl. 13.*)

48029. DODONAEA VISCOSA (L.) Jacq. Sapindaceæ.

A small shrub, native to Australia, with smooth red branches and obovate, coriaceous leaves. The few-flowered racemes are shorter than the leaves. The small flowers, with large purple anthers and red filiform styles, are dioecious. (Adapted from *Edwards, Botanical Register, pl. 1051.*)

48024 to 48034—Continued.

48030. LIMONIUM FRUTICANS (Webb.) Kuntze. Plumbaginaceæ.

(*Statice fruticans* Webb.)

Sea-lavender.

A remarkably ornamental shrubby plant, native to the Canary Islands, bearing ample corymbs of bicolored flowers; the bright-violet calyces and snowy-white corollas, which resemble morning-glories, are made more vivid by the small red bracts and by the bright-green wings of the flower stalks. The stout red stem is ringed, and each red petiole is bordered by the attenuated base of its glossy-green, leathery leaf. The rigid much-branched scapes are about three times the height of the loose rosette of obovate, crisply revolute leaves. (Adapted from *Flore des Serres et des Jardins de l'Europe*, vol. 4, p. 525.)

48031. MACKAYA BELLA Harvey. Acanthaceæ.

A tall, slender, nearly glabrous ornamental shrub with erect branches, native to Natal. The leaves are sinuate-toothed and veiny. The many-flowered racemes, 4 to 6 inches long, bear masses of pale-lilac campanulate flowers, nearly 2 inches in length, with the corolla throat delicately penciled with reticulated purple veins. This is perhaps the most beautiful of the Acanthaceæ. (Adapted from *Curtis's Botanical Magazine*, pl. 5797.)

Received as *Asystasia bella*; this species is now usually referred to *Mackaya*.

48032. SEMELE ANDROGYNA (L.) Kunth. Convolvuliaceæ.

"A most strikingly beautiful climber, of tropical appearance, growing to a height of 10 to 12 meters (33 to 39 feet). I grew this very drought-resistant species for more than 20 years before it produced seeds, and it was also always sterile elsewhere; I think, therefore, that it may interest you to receive a few more seeds, the plant being rare because of its unproductiveness, since the imported seeds from the Canary Islands have never germinated." (*Proschowsky*.)

48033. ZANTHOXYLUM ALATUM PLANISPINUM (Sieb. and Zucc.) Rehd. and Wils. Rutaceæ.

Kou-hua-chiao. An ornamental shrub or small tree, abundant in rocky places and by the side of streams in China, Chosen, and Japan. It is armed with stout, spreading prickles in pairs, and the handsome leaves are pinnately compound, 3 to 8 inches long, with a conspicuously winged rachis. The small pods are red and warty, disclosing lustrous-black seeds at maturity. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 6, p. 3538, and *Sargent, Plantæ Wilsonianæ*, vol. 2, p. 125.)

48034. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

"Var. *neumannii*. A shrub or small tree, native to southwestern Australia, 6 to 20 feet in height; it is more beautiful than the type. It is of rapid growth and produces enormous nodules on the roots (each nodule weighing up to 1 or 2 pounds). This tree will grow in the poorest soil. It is naturalized in my garden." (*Proschowsky*.)

48035 to 48075.

From Tangier, Morocco. Presented by M. Jules Goffart. Société d'Horticulture de Tanger. Received August 12, 1919.

48035. ACACIA ARMATA R. Br. Mimosaceæ.

Kangaroo thorn.

This simple-leaved, prickly acacia has a shrubby stem. 10 to 20 feet high, with graceful branches which are leafy to the tip. The long stamens give a soft fluffy appearance to the heads of opened flowers which are borne on axillary peduncles longer than the leaves. This plant is much grown for hedges, though less manageable than various other hedge plants, and not so fireproof; it is more important for covering coast sand with an unapproachable prickly vegetation. The wood is small, but beautifully grained, sound, and durable. Native to southern Australia. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 349, and *Curtis's Botanical Magazine*, pl. 1653.)

48036. ACACIA BONARIENSIS Gillies. Mimosaceæ.

An almost glabrous acacia from southern Brazil, with angular branches sparsely equipped with short, recurved spines. The long bipinnate leaves and branches are glabrous; the youngest leaflets and the peduncles are silky hairy, as are also the short, paniced flower spikes. (Adapted from *Hooker, Botanical Miscellany*, vol. 3, p. 207.)

For previous introduction, see S. P. I. No. 42321.

48037. ACACIA BRACHYBOTRYA Benth. Mimosaceæ.

A handsome shrub, several feet in height, silvery white with a close silky pubescence. It bears a small number of axillary racemes of tomentose many-flowered heads, and has very short leaves. Native to southeastern Australia. (Adapted from *Hooker, London Journal of Botany*, vol. 1, p. 347.)

48038. ACACIA CALAMIFOLIA Sweet. Mimosaceæ.

An entirely glabrous plant with rounded slender branches. The leaf-stalks, or leaves as they are usually called, are filiform, compressed, drooping, and compact. The small yellow flowers are erect on a very short stalk. It is an attractive ornamental, especially when in full bloom. It is said to be an excellent tan-bark species, containing 20 per cent of tannin. Native to southeastern Australia. (Adapted from *Edwards, Botanical Register*, vol. 10, p. 839.)

48039. ACACIA CULTRIFORMIS A. Cunn. Mimosaceæ.

A tall bushy shrub, glabrous and often mealy glaucous when young; native to New South Wales. The triangular leathery leaves (phyllodia) densely cover the angular branchlets. The numerous racemes, of many globular heads, are much longer than the leaves. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 375.)

This plant, if kept well pruned, forms an excellent hedge. For many years it has been cultivated in the open in California and is considered a desirable shrub.

48040. ACACIA CYANOPHYLLA Lindl. Mimosaceæ. Blue-leaved wattle.

A handsome shrub from Western Australia, 18 feet in height, with drooping branches and glabrous, lanceolate phyllodia; the lower ones are 1 foot, the upper 6 inches in length. The numerous large golden-yellow flowers are grouped in 3 to 5 heads borne on short racemes. The pods are long and narrow. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 364.)

48035 to 48075—Continued.

48041. ACACIA CYCLOPS A. Cunn. Mimosaceæ.

A shrub 6 to 10 feet in height, from southwestern Australia. The flowers are in dense globular heads and the pods are flat, coriaceous, and twisted. The black spherical seeds are encircled in double folds by a thickened and richly colored funicle. This shrub is used in South Africa for fixing drift sand on seashores. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 3, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48042. ACACIA ELONGATA Sieber. Mimosaceæ.

This slender curved-leaved acacia is a graceful species frequent on the Blue Mountains of New South Wales. It has drooping angular branches, and the younger ones are green and glabrous. The phyllodia are long and linear and bear clusters of peduncled globose heads of deep-yellow flowers in their axils. These clusters, which so profusely cover the leafy branches even to the tips, make this a remarkably ornamental plant. It is especially suitable for damp sandy land. (Adapted from *Curtis's Botanical Magazine*, p. 3337.)

48043. ACACIA EXTENSA Lind. Mimosaceæ.

A graceful shrub from Western Australia, with smooth 4-angled branches and very long, pointed leaves (phyllodia). The erect racemes, 6 to 9 inches long, are very leafy with scythe-shaped leaves between the flower heads. (Adapted from *Edwards, Botanical Register*, vol. 23, app. p. 15.)

48044. ACACIA FALCATA Willd. Mimosaceæ.

A tree 20 to 30 feet in height, with few slender branches and small yellow flowers in dainty spherical clusters on racemes borne in the axils of the dark glossy-green falcate leaves. The bark is important for tanning. The timber, which is sometimes called "lignum-vitæ," has yellow sapwood and light-brown heartwood; it is hard, heavy, and tough, and is much prized for stock-whip handles and for bending for coach-building purposes. The tree is an excellent one for raising a woody vegetation on drift sand. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 355, *Mueller, Select Extra-Tropical Plants*, p. 5, and *Loddiges, Botanical Cabinet*, vol. 12, pl. 1115.)

48045. ACACIA HOMALOPHYLLA A. Cunn. Mimosaceæ.

A small tree, abundant on the barren heaths of the interior of New South Wales, where it is one of the "spearwoods" of the natives. In Victoria, it grows on the saltbush flats and yields the close-grained, prettily marked myall wood. The gum is eaten; and the hard, heavy wood is used for boomerangs. On account of its solidity and fragrance, this dark-brown wood is much sought after for turners' work. Perhaps its most extensive use is in the manufacture of tobacco pipes. It is well adapted for cabinetmaking purposes; and fancy articles, such as rulers and napkin rings, are often made from it. It will grow in the bleakest and most arid localities wherever frost is not severe. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 357; *Mueller, Select Extra-Tropical Plants*, p. 6; and *Bailey, Queensland Flora*, pt. 2, p. 495.)

48046. ACACIA JUNCIFOLIA Benth. Mimosaceæ.

A tall shrub with slender branches and long needlelike leaves (phyllodia) tipped with a sharp point. The short peduncles are solitary or in pairs

48035 to 48075—Continued.

and bear small globular fuzzy heads of flowers. The narrow pods are half the length of the leaves. Native to northern and eastern Australia. (Adapted from Mueller, *Australian Species of Acacia*, vol. 1, pt. 2, pl. 8.)

Received as *Acacia pinifolia*.

48047. ACACIA JUNIPERINA Willd. Mimosaceæ. Prickly wattle.

An Australian shrub, 8 to 12 feet in height, with numerous gracefully drooping branches covered with short hairs; the flower clusters are delicately beautiful. The wood is light, white, and tough, and much esteemed by lumbermen for maul handles. (Adapted from Loddiges, *Botanical Cabinet*, vol. 4, pl. 398, and Maiden, *Useful Native Plants of Australia*, p. 358.)

48048. ACACIA LINIFOLIA (Vent.) Willd. Mimosaceæ.

A small tree or shrub, 12 to 18 feet in height, native to New South Wales and Queensland; very ornamental, with delicate branches and foliage. The leaves are the same length as the spikes of globular heads of sweet-scented yellow flowers. The tough, close-grained, soft, elastic wood is suitable for ax handles and perhaps for cabinet purposes; the heartwood is reddish in color. (Adapted from Maiden, *Useful Native plants of Australia*, p. 358, and Curtis's *Botanical Magazine*, pl. 2168.)

48049. ACACIA LONGIFOLIA (Andrews) Willd. Mimosaceæ.

An evergreen acacia from New South Wales, with a branching ashy-brown trunk, 20 to 30 feet high. The axillary flower spikes are shorter than the leaves and are so entirely covered with sessile citron-yellow flowers that they resemble catkins. The faint odor of the flowers is similar to that of peach blossoms. This is a valuable ornamental and a good shade tree for narrow streets. The bark is used as a tan for light leathers. The rapid-growing tree renders important service in subduing loose coast sand, the lower branches striking root into the soil; it should be disseminated on extensively bare sand shores in regions where no severe frosts occur. The timber is light, tough, hard, and durable and is used for tool handles, etc. (Adapted from Maund's *Botanist*, vol. 2, pl. 77, and Mueller, *Select Extra-Tropical Plants*, p. 7.)

48050. ACACIA MACRADENIA Benth. Mimosaceæ.

A glabrous tree, native to Queensland, 30 to 50 feet in height with lanceolate leathery leaves (phyllodia) from 6 to 12 inches in length. The clusters of small globular heads of flowers on their short stems are arranged like bunches of grapes. The beautiful, close-grained, blackish wood is capable of taking a very high polish. (Adapted from Maiden, *Useful Native Plants of Australia*, p. 359, and Mueller, *Australian Species of Acacia*, vol. 1, pt. 5, pl. 7.)

48051. ACACIA MELANOXYLON R. Br. Mimosaceæ.

An Australian hard-wooded tree, attaining a height of 100 feet; though of slow growth, it sometimes flowers when under 20 feet in height. The lanceolate phyllodia, 3 to 4 inches long, are leathery and evergreen. The elongated flat pod is often curved into a circle; and the orbicular seeds, each encircled by double folds of a long dilated scarlet funicle, hang on the tree for months, making this pyramidal acacia a beautiful street tree. The mature wood, which is very dark, makes an excellent substitute for black walnut for furniture and grillwork; and it is considered by some to

48035 to 48075—Continued.

be the most valuable of all Australian timbers. It is celebrated for its hardness and durability and is much valued for boat building, bridges, railroad carriages, tool handles, etc. The figured wood is cut into veneers. It is an excellent wood for bending under steam and is largely used for oil casks. As a fuel it is equal to hickory. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 359, and *Bentham, Flora Australiensis*, vol. 2, p. 388.)

48052 and 48053. *ACACIA MICROBOTRYA* Benth. Mimosaceæ.

48052. *Badjong*. A tall shrub from southwestern Australia, with a diameter of 1 to 1½ feet, which produces an edible gum. It prefers river valleys and lines brooks naturally. A single tree may yield 50 pounds of gum in a season. The aborigines store the gum in hollow trees for winter use; it has a pleasant sweetish taste. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 8, and *Maiden, Useful Native Plants of Australia*, p. 213.)

48053. Received as *Acacia myriobotrya*, which is considered synonymous with *A. microbotrya*. It is deemed best to grow these separately for the purpose of ascertaining the status of this form.

48054. *ACACIA MONILIFORMIS* Griseb. Mimosaceæ.

Tusca. A shrub with fragrant yellow flowers, common in the subtropical forests of Tucuman, Argentina, armed with straight spines and bearing dusty, 4-angled branches and petioles and glabrous leaves. The pods are linear, flat, and woody leathery; when young they are used as forage for cattle. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 19, p. 136.)

For previous introduction, see S. P. I. No. 42322.

48055 and 48056. *ACACIA NERIIFOLIA* A. Cunn. Mimosaceæ.

48055. A handsome tree, native to eastern Australia, 40 to 50 feet in height, with slender branchlets, mealy tomentose when young but soon glabrous. The small globular flower heads are in simple slender racemes shorter than the linear phyllodia. The flat straight pods are several inches long. The heartwood is light yellow, the rest is of a darker color. It is prettily marked, close grained, and tough. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 363, and *Bentham, Flora Australiensis*, vol. 2, p. 863.)

48056. Received as *Acacia iteaphylla*, which is considered a synonym of *A. neriifolia*. It is deemed best to grow both for the purpose of determining the status of this form.

48057. *ACACIA PODALYRIAEFOLIA* A. Cunn. Mimosaceæ. **Silver wattle.**

A shrub 4 to 6 feet in height, covered with hoary powder. Its neat gray ovate leaves and numerous long yellow racemes tipping the branches make it a very decorative species. The wood is pinkish in color and nicely marked. Native to Queensland. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364.)

48058 and 48059. *ACACIA PYCNANTHA* Benth. Mimosaceæ.**Golden wattle.**

48058. A small rapid-growing tree with coriaceous leaves (phyllodia) and masses of fragrant bright-yellow flowers. The tree is second only to *Acacia mollissima* in yielding tanbark. The bark

48035 to 48075—Continued.

is often superior in quality to that of the black wattle, but less in quantity, as the tree is smaller, reaching its maximum height at 30 feet. It exudes an abundance of gum, useful in cotton printing. Perfume is made from the flowers, and an aqueous infusion of the bark is used to preserve ropes, nets, and fishing lines. The wood is pale and easily worked and used for staves, tool handles, etc. The plant is useful as a sand binder. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 364, and *Mueller, Select Extra-Tropical Plants*, p. 12.)

48059. "A pendulous variety of the foregoing." Goffart.

48060 and 48061. *ACACIA RICEANA* Henslow. Mimosaceæ.

48060. A Tasmanian shrub, in general appearance much like *Acacia verticillata*, 3 to 4 feet high, with elongated and gracefully drooping branches. The surface of the dark-green awl-shaped leaves is covered with minute dots. The pale citron-colored flowers, on yellow peduncles and bearing many long exserted stamens, are in fluffy globular heads. The spikes are well down the stem from the leafy tip, and glimpses of the brown stalk between the daintily poised clusters remind one of Japanese art. (Adapted from *Maund's Botanist*, vol. 3, pl. 135.)

48061. "A slightly spiny variety of the foregoing." (Goffart.)

48062. *ACACIA BOSTELLIFERA* Benth. Mimosaceæ.

A tall shrub or small tree from Western Australia, with graceful glabrous branches. The thick, linear-lanceolate phyllodia are 2 to 5 inches long. The few flower heads are in short racemes. (Adapted from *Hooker, London Journal of Botany*, vol. 1, p. 356.)

48063. *ACACIA SCORPIOIDES* (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

A pubescent shrub with yellow flowers, which produces the white transparent gum arabic called gum thus. This tree yields an abundance of transparent gum, "nupe," and a good soluble adhesive gum, "mozambique." The wood is strong and durable and makes excellent knees and crooked timber in shipbuilding. In India it is used for wheels, agricultural implements, tool handles, railway sleepers, and fuel. A decoction of the bark is used as a substitute for soap. The pods are used for tanning in North Nigeria and for dyeing clothes a dingy yellow in Nubia and Egypt. Pods from North Nigeria have been found to yield when used for tanning a pale fawn-colored, but rather soft leather, worth about £6 per ton in England. The pods have been found to coagulate rubber latex and are also used for making ink. The leaves and green pods are given as fodder to goats, sheep, cows, and camels; and the tender young pods are sometimes eaten as a vegetable. In India the bark is of greater importance for tanning purposes, and the pods are used almost exclusively to remove the lime from skins and hides before tanning them. The trees come to maturity in about three years, though if grown for the bark they are considered at their best when from 4 to 6 years old. In order to attain the best results for tanning bark and fuel it is recommended, for financial reasons, that the trees be uprooted and the plantations renewed every 6 to 10 years. If grown for timber, from 20 to 40

48035 to 48075—Continued.

years would be required for full development. (Adapted from *Don, General History of the Dichlamydeous Plants*, vol. 2, p. 414, and *Holland, Useful Plants of Nigeria*, pt. 2, p. 288.)

48064. ACACIA SENEGAL (L.) Willd. Mimosaceæ.

A tree widely distributed in tropical Africa and cultivated in India. It has pinnate leaves and long, dense, clublike racemes of tiny flowers bristling with long stamens. This plant yields the true gum arabic of commerce, which is used for giving luster to crêpe and silk, for thickening colors and mordants in calico printing, in the manufacture of ink and blacking, as a mucilage, and for confectionery and medicinal purposes. The gum is more abundant in the dry season, exuding usually at the forking of the branches. In Kordofan the gum is obtained from both wild and cultivated trees, and in the gardens the trees are artificially cut (strips of the outer bark being removed) shortly after the rains cease; the first collection of gum is made about 60 days after cutting, and the garden is completely picked over every fourth day thereafter until the rains begin again and new leaves appear, at which stage the exudation ceases. The period of production is given at from 3 to 20 years, beginning when the trees are 3 or 4 years old and 8 feet in height. A plantation of about 10 acres has been estimated to yield from 1,200 to 1,500 pounds of gum in the course of a season. (Adapted from *Holland, Useful Plants of Nigeria*, pt. 2, p. 293, and *Engler and Prantl, Die Natürlichen Pflanzenfamilien*, vol. 3, pt. 3, p. 112, fig. 68.)

48065. ACACIA STRICTA (Andrews) Willd. Mimosaceæ.

A shrub 3 to 6 feet high, with linear phyllodia. The paired axillary heads of yellow flowers are borne freely in spring on short peduncles well down from the leafy tips of the branches. The seedling first produces 4 or 5 pinnate leaves, then changes its leaf form and produces only entire leaves. The wood is of a beautiful texture, sound and durable, but too small for anything but a very limited use. Native to Tasmania and southeastern Australia. (Adapted from *Loddiges, Botanical Cabinet*, vol. 1, pl. 99, and *Maiden, Useful Native Plants of Australia*, p. 637.)

48066. ACACIA SUAVEOLENS (J. E. Smith) Willd. Mimosaceæ.

A rather small species, native to Tasmania and eastern Australia, with few and slender branches; it frequently flowers when 2 years old. The linear leaves are four times the length of the small axillary spikes, which bear clusters of yellow flowers and red bracts. The flowers continue for a long time and have a delicate, pleasing form and a very agreeable odor. (Adapted from *Bailey, Queensland Flora*, pt. 2, p. 490.)

48067. ACACIA VERTICILLATA (Ait.) Willd. Mimosaceæ.

A shrub 6 to 10 feet in height, recommended as a hedge and as an ornamental. The solitary oblong spikes of yellow flowers, like fluffy catkins, are borne in the axils of the whorled linear phyllodia. Native to Victoria and Tasmania. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 334.)

48068. ACACIA VISCO Lorentz. Mimosaceæ.

An Argentine acacia, sparsely armed with recurved spines. The smooth sessile flowers, with numerous, long stamens, form scythe-shaped legumes which approach a maximum width of 1½ inches. The leaves

48035 to 48075—Continued.

are pinnately compound. (Adapted from *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 122.)

The striped walnut-colored wood is hard and durable. It is highly valued for its resistance to moisture and is used for all kinds of cabinet-work.

For previous introduction, see S. P. I. No. 43453.

48069. ACACIA sp. Mimosaceæ.

Sent in as *Acacia bartheriana*, for which a place of publication has not been found. Miss Katherine Jones, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, gives *A. bartheriana* Hort. as a synonym for *A. berteriana* (?), but our sample does not agree with the seeds of this species.

48070. ACACIA sp. Mimosaceæ.

Sent in as *Acacia donkelarii*, for which a place of publication has not been found. Miss Jones states, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, that *A. donkelarii* is a trade name for *Mimosa* (?), but our sample does not agree with the seeds of this genus.

48071. ACACIA sp. Mimosaceæ.

Sent in as *Acacia hispida*, for which a place of publication has not been found. Miss Jones, in Bailey's Standard Cyclopedia of Horticulture, vol. 1, p. 189, states that *A. hispida* Hort. is a synonym for *Robinia hispida*, but our sample does not agree with the seeds of this species.

48072. ACACIA sp. Mimosaceæ.

Sent in as *Acacia ovalifolia*, for which a place of publication has not been found.

48073. ACACIA sp. Mimosaceæ.

Sent in as *Acacia sepiaria*, for which a place of publication has not been found.

48074. PIPTADENIA CEBIL Griseb. Mimosaceæ.

(*Acacia cebil* Griseb.)

A handsome tree, attaining a height of 60 feet, forming forests in subtropical Argentina. The smooth pinnate leaves bear, in their axils, clusters of long-peduncled globose heads of white funnel-shaped flowers with long exserted stamens. The unarmed pubescent branches and petioles are cylindrical. The bark is astringent and is used in working leather. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 405, and *Abhandlungen der Koeniglichen Gesellschaft der Wissenschaften zu Goettingen*, vol. 24, p. 136.)

48075. PIPTADENIA RIGIDA Benth. Mimosaceæ.

An unarmed tree or shrub from subtropical South America, which furnishes the angico gum, similar to gum arabic. The small stiff leaflets are linear and shining above. The long, slender, stiff-winged legumes contain flat ovate seeds which are rich in tannin; the wood serves for naval construction. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 405, and Hooker, *London Journal of Botany*, vol. 4, p. 338.)

Received as *Acacia angico*.

48076. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Tucuman, Argentina. Plants presented by Mr. W. E. Cross, director, Agricultural Experiment Station. Received August 26, 1919.

Kavangire.

"We have made an attempt to trace the history of the Kavangire cane. In so far as our knowledge goes, cane bearing this name has been sent out only from the experiment station at Tucuman, Argentina, recently. Dr. Britz Zerbán, who was formerly chemist at that station, informs me that the variety was imported into Argentina from the experiment station at Cayana, Brazil, about the year 1909. We have not succeeded in finding out from where the cane was sent to Brazil." (*E. W. Brandes.*)

48077 to 48080.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48077. HORDEUM VULGARE NIGRUM (Willd.) Beaven. Poaceæ Barley.

Gatami. "A very early variety, introduced from Manchuria. It produced good yields in the Great Plains under extremely unfavorable conditions." (*H. V. Harlan.*)

For previous introduction, see S. P. I. No. 20796.

48078. HORDEUM VULGARE TRIFURCATUM (Schlecht.) Beaven. Poaceæ. Barley.

Skinless. "Feed barley." (*Richardson.*)

For previous introduction, see S. P. I. No. 42101.

48079 and 48080. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

48079. Purple Hull-less. "This barley has shown promise in the Rocky Mountain region." (*H. V. Harlan.*)

48080. White Hull-less. "This is more commonly known as *Nepal*. It has been more frequently introduced into the United States than any other variety, and has appealed to farmers because of the absence of awns. It has given superior yields only in high mountain regions and is preferred in some localities for hay." (*H. V. Harlan.*)

48081. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received September 26, 1919.

"*Djali bras.* In these times of searching for articles of food, it is perhaps worth the trouble to consider here a plant which is not generally known. I mean the *djali bras*. (The name is given to the plant as well as to the fruits.)

"The *djali watol* is better known. The Javanese children string the fruits of this plant as beads for necklaces and bracelets. The *djali bras* has kernels inclosed in a hard skin, while the *djali watol* is a hard mass. Herein the two species differ from each other. By virtue of its hard seed coat the *djali bras* can be preserved for a long time without being attacked by insects, so that it is a valuable article to provide in times of famine.

"The plant will grow everywhere, and yet it is seldom cultivated and is not generally known even among the Javanese. The *djali bras* is prepared as a

food in various ways. Steamed it can be used in the place of rice, as far as nutrition and digestibility are concerned. Prepared as a porridge it has the taste of oatmeal and is as good to eat as the latter. If ground into meal and mixed with wheat flour, half and half, bread can be made from it. The bread is much more delicious and not so sour as the common kleffe bread used here in the Dutch Indies. Pancakes and pastries can also be made from the meal. The plant can be grown on all sorts of soil. More attention should be paid to this plant than has been hitherto.' (P. W. Van der Broek.)

"*Djali bras* and *djali watol* are two species, both of which belong to the genus *Coix* or *Chionachne* of the family Gramineæ. Job's-tears is a common name for either both, or especially for *djali watol*; hence, also the scientific name *Coix lacryma-jobi*.

"Some details about *djali* are found in an article by Van der Kemp in the *Tijdschrift voor Nijverheid en Landbouw*, vol. 20, p. 32. According to Van der Kemp, only two species of the edible *djali* are distinguished: *Djali padi*, *Coix koenigii*, originally from Sumatra, rare at Java; and *djali ketan*, the common *Coix agrestis*.

"For the following information I am obliged to Heyne. There appears in a report by the Internationale Crediet en Handelsvereeniging Rodderdam at Cheribon, dated 1912, a statement to the effect that about 1,000 piculs (a picul is 133½ lbs.) of *djali* were exported annually to Palembang and to the east coast of Sumatra. The price varied in the shipping harbors in the same year between 6 and 7 gulden (a gulden, or guilder, is \$0.402) per picul.

"There are divergent reports as to the food value of *djali*. However, that it is a nourishing and wholesome product is certain." (Excerpted from W. G. Boorsma, *Teysmannia*, vol. 29, No. 1, p. 59.)

48082. CASSIA TORA L. Cæsalpiniaceæ.

From the Belgian Kongo. Presented by Father Hyacinthe Vanderyst, Mission Catholique, Leverville, Moyen Kwilu. Received September 29, 1919.

An erect, almost glabrous annual, widely distributed through tropical Africa and through the Tropics generally. The plant attains a height of 2 to 3 feet, although the stem occasionally becomes arborescent in Guinea. From the seeds is made a most useful yellow dye, suitable for tasar silk; this is regularly sold to dyers to combine with indigo to produce a green shade. The seeds are also roasted and ground to form a substitute for coffee. Along the Gambia River, on the west coast of Africa, the stalks and tender leaves are eaten as food. The leaves and roots are each used as a remedy for ulcers and ringworms. (Adapted from Oliver, *Flora of Tropical Africa*, vol. 2, p. 275; Holland, *Useful Plants of Nigeria*, pt. 2, p. 260; and Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 224.)

48083. EUGENIA sp. Myrtaceæ.

From Sawtelle, Calif. Presented by Mr. P. D. Barnhart. Received September 29, 1919.

"An interesting *Eugenia* from South America, especially valuable for ornamental planting in California and Florida. It is evergreen, with small dark glossy-green leaves. The young leaves and twigs are a beautiful red. The plants lend themselves to shearing and will make excellent hedge plants as well as trained specimens for tubs, etc." (Peter Bisset.)

48084 and 48085.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

48084. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

Square Head. "Six-rowed field barley, produced by Prof. Perkins, of Roseworthy College, South Australia." (*Richardson.*)

48085. AVENA SATIVA ORIENTALIS (Schreb.) Richter. Poaceæ. **Oats.**

Black Tartarian. "A late black side oat grown to a limited extent in the United States." (*C. W. Warburton.*)

48086. ROSA CORIIFOLIA Fries. Rosaceæ. **Rose.**

From Bell Station, Md. Presented by Dr. Walter Van Fleet. Received September 8, 1920.

"Variety *frobeli*. A promising rose for budding or grafting stock. This rose has been introduced through several sources under the name of *Rosa laxa*. It was grown at the Arnold Arboretum under the name *R. laxa* for several years. *R. coriifolia* is related to the common dog rose, *R. canina*. It is a strong grower, with upright and nearly smooth stems; the flowers are white, the fruit globose and red. The vigor and hardiness, together with its upright and nearly smooth stems and lack of suckers, make it a promising plant for stock. It seeds readily and prolifically and the seedlings come very true. Fruiting plants are to be found at the Arnold Arboretum, Jamaica Plain, Mass., and in the collections of Dr. W. Van Fleet, Bell Station, Md. The rose appears to be perfectly hardy." (*B. T. Galloway.*)

48087. CORDEAUXIA EDULIS Hemsl. Cæsalpiniaceæ. **Yeheb nut.**

From Italian Somaliland, Africa. Nuts presented by the governor of Italian Somaliland, through Capt. Vannutelli, of the Italian Legation. Received September 19, 1919.

"A leguminous shrub or small tree not very far removed from our common cassia. It is also related to the carob and to the Kentucky coffee tree. The plant is an evergreen and is reported so far only from Somaliland and from a region known as the Haud, a waterless desert south of Bohotleh on the southern frontier of the British Protectorate. The kernels have a rather good flavor and are rich in sugar and carbohydrates and have also a very satisfactory amount of proteids. It is said that the natives stew and eat them. The nutritive ratio is 1:6.5, which is very good." (*B. T. Galloway.*)

48088 to 48102.

From Johannesburg, Transvaal. Purchased from the Agricultural Supply Association, through Mr. J. Burt Davy, botanist. Received September 24, 1919. Quoted notes by Mr. Davy.

48088 and 48089. AVENA SATIVA L. Poaceæ. **Oats.**

48088. "*Boer* oat. The principal oat grown for forage, i. e., oat hay, before the Anglo-Boer War, and valued for the fineness of its straw. Almost ousted by the Algerian oat and now very rare. The *Boer* oat always contains some black kernels among the brown. The glumes have a characteristic roughness which readily distinguishes them from *Algerian*. Grown under irrigation."

48089. "*Heijira* rustproof oats. A rather recent introduction which has been grown with some success in the dry districts of the Western Transvaal and is claimed to be rust resistant."

48088 to 48102—Continued.

48090. *AVENA STERILIS* L. Poaceæ.

Oats.

"*Cape Algerian*. Since the Anglo-Boer War this oat has largely replaced the old *Boer* oat, being considered less subject to rust. The straw is coarser, however, than that of the *Boer* oat."

48091. *CHAETOCHELOA ITALICA* (L.) Scribn. Poaceæ.

Millet.

(Setaria italica Beauv.)

"*Boer Manna* millet. An old South African strain of *Setaria italica*, largely grown in the summer rainfall region, especially before the Anglo-Boer War, for horse feed, but now largely replaced by *teff* (*Eragrostis abyssinica*)."

48092. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

"*Cape barley* (*Transvaal Early*). This type of barley has been grown for generations in South Africa under unfavorable moisture conditions. Given better soil treatment and more moisture, it can be grown into a good, plump, heavy grain. It is used to some extent by local maltsters, but is more largely grown for green winter feed for horses and milch cows."

48093. *HORDEUM INTERMEDIUM CORNUTUM* (Schröd.) Harlan. Poaceæ.

Barley.

"*Barley Wheat*. A naked barley grown to a limited extent under irrigation to provide green fodder for horses and dairy cows during the dry winter months. Several strains have been met with during the last 15 years, but this is almost the only one now met with in the Transvaal, and it is scarce."

48094. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

"*Cape lucern*. A local strain of *Medicago sativa* grown for years by the ostrich farmers of the Oudtshoorn Valley and well acclimatized. This seed germinates more quickly than the imported *Provence*. Considerable quantities of Cape-grown seed have been shipped to Europe and Australia since the ostrich slump, and it is believed that this has been resold as *Provence* and as *Hunter River* lucern."

48095. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ.

Pearl millet.

(P. typhoideum Rich.)

"*M'Myouti*. A South African strain grown for food by the Bantu tribes of tropical and subtropical Transvaal and now being grown by Europeans for fodder and silage for live stock."

48096. *SECALE CEREALE* L. Poaceæ.

Rye.

"*Orange Free State* rye. A strain of rye-corn which has become adapted to the droughty conditions of the Orange Free State, where it is often grown on the eastern borders with the sole aid of the sparse winter rains. Lack of winter moisture accounts for the rather poor development of the grain."

48097 to 48100. *TRITICUM AESTIVUM* L. Poaceæ.

Common wheat.

(T. vulgare Vill.)

48097. "*Transvaal Wolkoren* wheat. A favorite soft white wheat, grown under irrigation in the Transvaal bushveld, with an average rainfall during the summer season of about 20 inches and great heat. One of the oldest of the South African wheats. It is also grown in Namaqualand and the northwestern part of the Cape Province."

48088 to 48102—Continued.

48098. "*Transvaal Kleinkoren* wheat. A very famous old wheat, considered by expert millers the best of the South African milling wheats. It is grown under similar conditions to *Wolkoren*. There are two strains, *red* and *white*, but it is impossible to get seed of either of them pure. The Boers consider that the soil affects the color and gradually changes white wheat to red or vice versa."

48099. "*Gemsbok Oudebaard* wheat. An old Cape Colony bearded white wheat, grown under irrigation in the karoo, Britstown Division, Cape Province, where the rainfall is about 10 inches and the heat intense. It is a heavy yielder and the favorite wheat in that part of the country. It is recommended for trial in Arizona and New Mexico, under irrigation."

48100. "*Red Victoria*. This wheat is grown commercially only on the eastern high veld of the Transvaal; that is to say, in the districts of Ermelo, Bethel, Standerton, Carolina, and Wakkerstroom, where the rainfall is about 33 inches per annum, mainly in the summer months.

"It is grown as a winter crop, sometimes under irrigation, but in seasons where we receive a little winter rain it is treated as a dry-land crop and is considered the only wheat which can be successfully grown in those districts as a dry-land winter crop. It is sown in the months of July, August, and September; and it is perhaps the only wheat which can be grown as late as September. *Red Victoria* appears to be somewhat rust resistant; it is harvested in the early summer and therefore subject to the early summer rains, which bring rust to most wheat crops. The grain, although small in appearance, is said to mill well. This may fit in where climatic conditions do not suit regular varieties, and I would suggest the advisability of crossing *Red Victoria* with some other of your regular varieties, on account of its rust-resisting tendency."

48101. TRITICUM DURUM Desf. Poaceæ.

Durum wheat.

"*Zwaartbaard*. An old Transvaal durum wheat, almost lost during the Anglo-Boer War. It is recommended for its relative hardness; also known as *S. A. Medeah*."

48102. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

"*Dhal*. Grown for food by the Bantu tribes of tropical and subtropical Transvaal and Natal. It has been taken up by white farmers in Rhodesia as a green-manure crop."

48103 to 48144.

From Melbourne, Victoria, Australia. Presented by Prof. A. E. V. Richardson, agricultural superintendent. Received July 22, 1919.

"The following barley and oat varieties may be of interest to you. Some of them will be familiar to you as American-grown varieties obtained from the United States some years ago and grown here ever since; those marked with an asterisk (*) are of Australian breeding. Barleys Nos. 36 and 49 are two recent crossbreeds." (*Richardson*.)

Introduced for specialists in the United States Department of Agriculture.

48103 to 48144—Continued.

48103 to 48114. *AVENA SATIVA* L. Poaceæ.

Oats.

48103. *Bonanza*. "A midseason white oat grown to some extent in the northern United States." (C. W. Warburton.)

48104. *Clydesdale*. "An old Scotch variety grown to some extent in the northern United States." (C. W. Warburton.)

48105. *Danish Island*. "A midseason white oat grown to some extent in the United States." (C. W. Warburton.)

48106. *Dun*. "An English winter oat similar to the *Winter turf* of the United States." (C. W. Warburton.)

48107. *Gold Queen*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48108. *Norway King*. "Obtained by the Department of Agriculture, Victoria, from Mr. J. W. Broatch, Moose Jaw, Saskatchewan." (Richardson.)

48109. **Ruakura*. "A rust-resistant oat developed from a single plant of *Argentine* oats selected by Primrose McConnell, of the Ruakura Experiment Farm, New Zealand, in 1908. This variety appears to be resistant to both stem and crown rust in the United States, but experiments here indicate that it has little commercial value. It is of probable interest to plant breeders." (C. W. Warburton.)

"It has never been claimed that the new oat is apparently rustproof. What can be claimed is that it is the most resistant to disease of all the varieties tested at Ruakura." (*Journal of Agriculture, New Zealand*, vol. 6, p. 133.)

"This oat was imported from New Zealand, having originated as a variation in a crop of *Argentine* oats at the Ruakura Experiment Farm, in the Dominion. It is claimed that it is rust resistant and a wonderful yielder. It has not been tried sufficiently long in this State to allow of any further comment, except that when sown beside *Algerian*, on the south coast this season, it promised particularly well and compared more than favorably with that variety from a green-fodder point of view." (*Agricultural Gazette, New South Wales*, vol. 25, p. 1018.)

48110. *Sunrise*. "This is a very early oat, ripening quite a week before *Algerian*. The straw is a foot taller than that variety and liable to lodge in some seasons, though of much the same stoutness as *Algerian*. It stools rather sparsely, and the grain is fairly long, grayish white, plump, with a thin husk. *Sunrise* is recommended only for the warmer districts and should not be sown so early as *Algerian*. It occupies a similar place among oats to *Firbank* among wheats. It is a natural crossbreed from *Algerian* oats. Among the oats recommended for further trial at the Experiment Farms." (*Agricultural Gazette, New South Wales*, vol. 25, pt. 3, p. 236.)

48111. *Swedish*. "Presumably the well-known midseason white oat, *Swedish Select*." (C. W. Warburton.)

"Forwarded from the Panama Exposition, San Francisco, to the Department of Agriculture, Victoria." (Richardson.)

48103 to 48144—Continued.

48112. *Tartar King*. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48113. *Tartar King*. "A midseason white side oat grown to a limited extent in the northeastern United States." (C. W. Warburton.)

48114. *White Tartarian*. "The well-known late white side oat, which is grown to a limited extent in the northern United States. Identical with *White Russian*." (C. W. Warburton.)

48115 to 48120. *AVENA STERILIS* L. Poaceæ. Oats.

48115. *Algerian*. "A variety commonly grown in Australia and New Zealand and presumably originally from northern Africa. Quite similar to *Red Rustproof*." (C. W. Warburton.)

48116. *Argentine*. "Presumably from a commercial lot of oats from Argentina." (C. W. Warburton.)

48117. *Calcutta*. "A red oat originally from India." (C. W. Warburton.)

48118. **Glen Innes*. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48119. **Guyra*. This matures at about the same season as *Algerian*, with straw about equal in height to that variety, not coarse, but strong. It stools very fairly, and has a compact head with dark-brown plump grain which has a medium strong awn like its parent, *White Ligowo*. The husk is not thick. *Guyra* is suited to typical oat districts. It is a cross between *Algerian* and *White Ligowo*, and is one of the oats recommended for further trial at the Experiment Farms. (Adapted from *The Agricultural Gazette, New South Wales*, vol. 25, pt. 3, p. 236.)

48120. **Lachlan*. "Evidently a selection from *Algerian*." (C. W. Warburton.)

"This variety was bred by Mr. J. T. Pridham, of Cowra Experiment Farm, New South Wales." (Richardson.)

48121 to 48132. *HORDEUM DISTICHON PALMELLA* Harlan. Poaceæ.

Barley.

48121. *Archer*. "Two-rowed malting barley." (Richardson.)

"One of the most widely grown barleys in England. It takes its name from its arrow-shaped spike." (H. V. Harlan.)

48122. *Chevalier*. "The most widely known of English varieties. It originated as a plant selected by the Rev. Chevalier, from whom it received its name. It is a commercial crop in the Gallatin Valley, Montana, and in the Salinas Valley, Calif." (H. V. Harlan.)

48123. *Duckbill*. "This variety has been regularly grown in Victoria as a malting barley for many years. It was probably imported from England." (Richardson.)

48103 to 48144—Continued.

48124. *Garton's Regenerated Maltster*. "Originated by Garton's seed firm in England." (*H. V. Harlan.*)

48125. **Gisborne*. "Widely grown in New Zealand and Australia." (*H. V. Harlan.*)

48126. **Golden Grain*. "Two-rowed malting barley." (*Richardson.*)

48127. *Goldthorpe*. "Feed barley." (*Richardson.*)

"An erect, late-seasoned, large-kerneled barley, widely grown in England." (*H. V. Harlan.*)

48128. *Hannchen*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden. This has proved to be the best of the Swedish barleys under American conditions and has given good yields in the Western and Plains States." (*H. V. Harlan.*)

48129. *Kirgizean*. "A variety forwarded to the Department of Agriculture, Victoria, from the Imperial Garden, Petrograd, in 1913." (*Richardson.*)

48130. *Primus*. "Originated by the Svalof Plant-Breeding Association, Svalof, Sweden." (*H. V. Harlan.*)

"Heads borne on strong culms which are bent above almost horizontally. The kernel is especially well formed and full, ripens early, scarcely a day or so later than *Hannchen*, and the plant is especially productive. It is quite certainly, as far as quality is concerned, the highest grade yet known among the *Imperial* barleys. It is well suited to heavy cold loams and clay soils such as are to be found in middle Sweden." (*N. H. Nilsson.*)

48131. *Princess*. "A pedigreed variety, originated on the grounds of the Svalof Plant-Breeding Association, Svalof, Sweden. It is characterized by an especially strong straw and an excellent quality of grain. It is remarkably well suited for heavy clay soils where there is danger of the grain falling." (*David Fairchild.*)

48132. **Pryor*. "Two-rowed malting barley." (*Richardson.*)

48133 to 48144. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. **Barley.**

48133. *California Feed*. "More properly known as *Coast*; a commercial variety of the Pacific and Mountain States. Probably originated in North Africa and likely introduced into California by Spanish missionaries." (*H. V. Harlan.*)

48134. *Cape*. "Two-rowed malting barley." (*Richardson.*)

"Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48135. *Chilean C*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48136. *Chilean D*. "Similar to *Coast*. It has succeeded in the western United States." (*H. V. Harlan.*)

48137. **Kinver*. "Two-rowed malting barley." (*Richardson.*)

48138. *Manchurian*. "Originally from Manchuria; it has given good yields in the northern Mississippi Valley." (*H. V. Harlan.*)

48139. No. 36. "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)

48103 to 48144—Continued.

48140. *No. 49.* "Introduced from New South Wales to Victoria in 1917; a selection of seed barley imported into that State." (*Richardson.*)

48141. *Odessa.* "Introduced from Odessa, Russia, and thought to be the most promising barley for South Dakota conditions." (*H. V. Harlan.*)

48142. **Roseworthy Oregon.* "Six-rowed field barley, with dark-colored grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)

48143. *Sea of Azov.* "This was introduced by a local produce merchant from seed imported from Russia." (*Richardson.*)

48144. *Short head.* "Six-rowed field barley, with dark grain, produced by Prof. Perkins, Roseworthy College, South Australia." (*Richardson.*)

48145. SOLANUM MAMMOSUM L. Solanaceæ.

From Ecuador. Collected in 1918 by Dr. J. N. Rose, associate curator, United States National Museum. Numbered in October, 1919, for convenience in recording distribution.

"This *Solanum* has large thorny leaves, and bears a large deep-yellow fruit, about 3 inches long and 2 inches through, with five small fingerlike protuberances projecting from the side, at the base. The fruit lasts for a long time, both on the plant and after being picked, and is quite a curiosity." (*Peter Bisset.*)

For previous introduction, see S. P. I. No. 46374.

48146. RAPHIA VINIFERA Beauv. Phœnicaceæ. Palm.

From Aburi, Gold Coast, West Africa. Purchased from Mr. W. D. Tudhope, Director of Agriculture, Agricultural Department of the Gold Coast Colony, Ashanti, and Northern Territories. Received October 3, 1919.

The *bamboo* or *wine palm*, so called because the natives make wine from the sap of the trunk, is native to west and central tropical Africa, the commonest tree in the swamps and lowlands which line the waterways. Dense thickets of these graceful palms, traversed only by the wine gatherer or the bamboo cutter, push their way into the lagoons and extend over the flood grounds, and even for a distance of 15 to 20 miles up the river valleys into the interior. African bass, a valuable brush fiber, and raffia are both obtained from this palm. The strong whalebonelike bast fiber, contained in the lower portions of the leafstalk, is very easily extracted by a simple process of soaking and beating, and is then made into excellent brooms and brushes. Raffia is prepared by peeling off the cuticle, with some of the underlying fibrovascular bundles, on one or both sides of the leaf. It is used locally for woven fabrics, cloth, hats, and matting. The loose strips of raffia are in demand as tie bands by gardeners. In length of fiber, but more especially in yield of cellulose, it is superior to esparto grass, *Stipa tenacissima*, which is valuable for making rope, brooms, baskets, paper, etc. The following analysis proves the worth of *Raphia vinifera* for paper making: Moisture, 9.8 per cent; ash, 2.7 per cent; cellulose, 60.8 per cent. Ultimate fibers (length), 1.5 to 2.5 mm. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1891, No. 49, p. 38, and Jackson, *Journal of the African Society*, vol. 1, p. 299.)

48147 to 48149. TRITICUM spp. Poaceæ.

Wheat.

From Santa Ursula, Teneriffe, Canary Islands. Purchased from Mr. G. V. Perez. Received October 6, 1919.

"Of the two wheats, *Jarinegro* and *Morisco*, the first is much more prolific, but the people here do not like it because it does not contain as much flour. However, it must be rich in vitamins and I consider it a very valuable wheat. The peasants at Laguna (Teneriffe) are fond of mixing and sowing the two together; they do not sow *Jarinegro* nearly as much as they did in the past because of the appearance of the flour. It may be a very superior food, notwithstanding its appearance." (Perez.)

48147. TRITICUM DURUM Desf.

Jarinegro.48148 and 48149. TRITICUM [ÆSTIVUM L.
(*T. vulgare* Vill.)48148. *Morisco*.

48149. Received as a mixture of *Jarinegro* and *Morisco* from which the durum wheat has since been removed and discarded.

48150. YUCCA ELATA Engelm. Liliaceæ.
(*Y. radiosa* Trelease.)

Palmilla.

From Las Cruces, N. Mex. Presented by Prof. J. G. Griffith, biologist, Agricultural Experiment Station, through Mr. L. H. Dewey, Botanist in Charge of Fiber Investigations. Received October 7, 1919.

A very striking arborescent yucca, the larger trees reaching a height of 5 to 7 meters [16 to 23 feet], simple, or with a few short branches at the top. The long pallid leaves are white margined, rigidly divergent, and reach a maximum width of half an inch; they are soon finely and copiously filiferous. The white bell-shaped flowers with lanceolate petals are in large panicles on long exserted peduncles, often twice the length of the rest of the plant. The capsule is stout, oblong, and unusually symmetrical, very smooth, and of a clear straw color at maturity; the seeds are exceptionally large, some are nearly half an inch long. (Adapted from *Report of the Missouri Botanical Garden*, vol. 13, p. 56.)

48151. METROSIDEROS TOMENTOSA A. Rich. Myrtaceæ.

From Bay of Plenty, New Zealand. Presented by Mr. Charles G. Hallet. Received October 6, 1919.

"Seeds of a very ornamental tree, of a spreading nature, which grows along our northern coasts. In midsummer, it is covered with crimson flowers which secrete large quantities of light-colored, mild-flavored nectar. The tree makes a good windbreak, withstanding gales and salt spray splendidly; the crooked limbs are much used for knees and cleats in boat building. The tree is probably as sensitive to frost as the fig or the lemon. Collected at Napier." (Hallet.)

48152. DECAISNEA FARGESII Franch. Lardizabalaceæ.

From Rochester, N. Y. Presented by Mr. John Dunbar, assistant superintendent of parks. Received October 10, 1919.

"A very attractive ornamental shrub reminding me somewhat of the Oregon grape (*Berberis aquifolium*) in habit; from E. H. Wilson's collection." (David Fairchild.)

An erect shrub, 7 to 16 feet in height, very common in moist woods and thickets in western Hupch and in Szechwan between 2,000 and 8,500 feet in altitude. The deep-blue fruit contains a white pulp in which are imbedded the numerous flattened jet-black seeds. The pulp is edible but of insipid flavor. The fruits are commonly eaten by monkeys on Mount Oniei and elsewhere in that region. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 344.)

48153 to 48160.

From Burringbar, New South Wales. Presented by Mr. B. Harrison. Received October 11, 1919. Quoted notes by Mr. Harrison.

48153. BRASSICA PEKINENSIS (Lour.) Gagn. Brassicaceæ. Pai ts'ai.

"*Toyahama cabbage*. A variety of pai ts'ai which attains, with good cultivation, a weight of 30 to 40 pounds."

48154. CAPILLIPEDIUM PARVIFLORUM (R. Br.) Stapf. Poaceæ. Grass.

"A native grass, 4 feet in height, called *bluegrass*."

48155. CASUARINA CUNNINGHAMIANA Miquel. Casuarinaceæ.

A tree attaining a maximum height of 100 feet, found along mountain river banks in eastern Australia. The wood is used for yokes, tools, shingles, etc. A yoke was unimpaired after having been in use for 14 years. The foliage is much relished as pasturage. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 197.)

48156. CUCUMIS SATIVUS L. Cucurbitaceæ. Cucumber.

"*Mammoth cucumber*. This cucumber grows to a very large size, almost as large as a medium-sized vegetable marrow, and keeps well. The flesh is very firm, crisp, and sweet."

48157. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"*Saccaline*. A perennial sorghum, 12 feet in height, which yields 15 to 20 tons per acre."

48158. PANICUM PARVIFLORUM R. Br. Poaceæ. Grass.

"One of our best native grasses, a very heavy yielder of nutritious fodder. It is 3 to 4 feet in height and grows well in sandy soil."

48159. PASPALUM LARRANAGAI Arech. Poaceæ. Grass.

"*Giant paspalum grass*. A frost-resistant grass, 5 or 6 feet in height, which gives a heavy yield and is much relished by stock. A good grass for moist land."

48160. THEMEDA QUADRIVALVIS (L.) Kuntze. Poaceæ. Grass.

"*Kangaroo grass*. A splendid grass 3 to 5 feet high, always relished by stock. Worthy of careful propagation."

48161. CAPSICUM ANNUUM L. Solanaceæ. Red pepper.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Numbered November, 1919.

"Seed from plants grown at the Yarrow Plant Introduction Field Station, season of 1919, from seeds received April 22, 1919. This pepper is grown in Cuba under the name of the *Creole*. The beautiful golden-yellow fruit is about 3 inches long by 2 inches thick. The flavor is quite mild." (Peter Bisset.)

48162. DIOSPYROS sp. Diospyraceæ.**Persimmon.**

From Puerto Bertoni, Paraguay. Presented by Dr. M. Bertoni. Numbered October, 1919.

"*Kaki silvestre*. A species of *Diospyros*, indigenous to the forests of eastern Paraguay and commonly found in rocky places in the open woods on the banks of the Rio Parana. It is a small tree, 20 to 26 feet high, and quite leafy; it produces a great abundance of almost spherical fruits, about an inch in diameter, which mature in autumn. *Kaki silvestre* apparently does not suffer from the effects of temperatures above -3° C. [27° F.]. It could possibly be used advantageously as a stock with *Diospyros kaki*." (*Bertoni*.)

48163. PISTACIA ATLANTICA Desf. Anacardiaceæ.

From Tripoli, Libya, Africa. Presented by Dr. O. Fenzi, director, Stabilimento Orticolo Libico. Received October 15, 1919.

A tree, native to northwestern Algeria, 35 to 49 feet in height, with many woody branches in a dense head. The blue drupe is somewhat fleshy and about the size of a pea. The tree is frequently found in sandy uncultivated fields not far from the city of Gafsa and seems to have been cultivated at one time by the inhabitants. A resinous gum flows from the bark of the trunk and branches at various times of the year, especially in summer, and hardens to a pale yellow color. It has a pleasant aromatic odor and taste, scarcely distinguishable from the oriental mastic gum, and called by the same name, *huelc*, by the Moors. It thickens in plates covering the branches, or in irregular balls differing in thickness and shape, often the size of a finger. Some of these become detached from the tree and are scattered on the ground. The Arabs collect this substance in autumn and winter and chew it to whiten the teeth and sweeten the breath (Adapted from *Desfontaines, Flora Atlantica*, vol. 2, p. 364.)

It is one of the species used for stocks for the true pistache.

48164 to 48170.

From Auckland, New Zealand. Presented by Mr. H. R. Wright. Received October 14, 1919. Quoted notes by Mr. Wright.

48164. ALECTRYON EXCELSUM Gaertn. Sapindaceæ.

"A handsome evergreen tree, commonly called the New Zealand oak."

A tree 30 to 60 feet high, with black bark; the young branches, the under surfaces of the compound leaves, the paniced inflorescences, and the capsules are clothed with a silky, ferruginous pubescence. The globose, shining, jet-black seeds, from which the Maoris formerly extracted an oil, are half embedded in a scarlet, fleshy, cup-shaped aril. The tree yields a tough, elastic timber valuable for ax handles, bullock yokes, etc. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 103.)

48165. ENTELEA ARBORESCENS R. Br. Tiliaceæ.

One of the handsomest of small trees, which used to be common along the north coast of the North Island. In some places this tree is called the *New Zealand mulberry*, on account of the shape of the large heart-shaped leaves, which are beautifully veined, soft, and wilt quickly when gathered. The pure-white flowers with crumpled petals are produced in large drooping clusters, each single blossom being about an inch in diameter. The fruit is dark brown and rough, with inch-long bristles. The wood is remarkably light and was used by the Maoris for floats

48164 to 48170—Continued.

for their fishing nets and in the construction of small rafts. It is about half the weight of cork and is sometimes termed the "cork-wood" tree. It has been suggested that it might be utilized for life belts. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 242.)

48166. GAULTHERIA OPPOSITIFOLIA Hook. f. Ericaceæ.

"This dainty little New Zealand shrub, which produces two crops of charming heathlike flowers during the year, should be in every garden. It is especially suitable for rock gardens, as it is usually found growing on steep clay banks, where very little nourishment is obtained."

48167. GAYA LYALLII (Hook. f.) Baker f. Malvaceæ.

(*Plagianthus lyallii* Hook. f.)

"The giant-flowered southern lacebark of New Zealand. This is without doubt the most beautiful of our hardy large shrubs. It produces large clusters of pure-white cherrylike blossoms, hanging most gracefully on long stems. In colder parts this plant is deciduous. It is one of the easiest to cultivate, as it transplants easily and will grow from cuttings or seed."

48168. LEPTOSPERMUM SCOPARIUM NICHOLLII (Darr.-Smith) Turrill. Myrtaceæ.

A red-flowered variety of this very abundant tree or shrub, the beautiful colonial counterpart of the English broom or gorse, sometimes 30 feet in height. Early voyagers and colonists sometimes used its pungent leaves in place of tea. Indeed, the whole plant, including leaves, flowers, fruit, and young shoots, is highly aromatic, and the oil which it contains will perhaps, in the future, be put to some useful purpose. The wood is largely used for fences and firewood. The Maoris made use of it for their paddles and spears, and a bunch of the twigs makes an excellent broom. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 272.)

48169. OLEA CUNNINGHAMII Hook. f. Oleaceæ.

"A very fine flowering shrub."

It bears whitish branches, downy young shoots, linear-oblong leathery leaves 3 to 6 inches long, and small greenish white flowers in dense erect racemes. The drupes are half an inch long. Native to North Island, New Zealand. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 334.)

48170. VERONICA SPECIOSA R. Cunn. Scrophulariaceæ.

A rare and beautiful stout shrub from North Island, New Zealand, with crimson flowers in large dense racemes. The leaves are oblong, thick, shining, 1 to 4 inches long and an inch broad, with a 2-layered epidermis. It flourishes best when in reach of the sea spray. Many varieties of this plant are cultivated in gardens. (Adapted from *Laing and Blackwell, Plants of New Zealand*, p. 376.)

48171 to 48189.

From Cape Town, Cape Province. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 24, 1919. Quoted notes by Dr. Shantz.

48171. CITRULLUS VULGARIS Schrad. Cucurbitaceæ. Watermelon.

"(No. 16. St. Vincent, Cape Verde Islands. July 28, 1919.) A few black seeds. All seeds in the market are very impure."

48171 to 48189—Continued.

48172 and 48173. *CUCURBITA PEPO* L. Cucurbitaceæ. Squash.

48172. "(No. 14. St. Vincent, Cape Verde Islands. July 28, 1919.) White seeds of a cucurbit sold in market. There was no fruit with this seed. Apparently a few plants are grown where water can be obtained to irrigate."

48173. "(No. 15. St. Vincent, Cape Verde Islands. July 28, 1919.) Yellowish seeds of a cucurbit. Procured with the preceding number."

48174. *FELICIA* sp. Asteraceæ.

"(No. 29. Kirstenbosch, Cape Province. August 25, 1919.) A low-growing spreading plant, 3 inches high, with bright-blue asterlike flowers, suitable for borders. It is sparse in habit of growth, but the flowers are unusually attractive."

48175. *OXALIS* sp. Oxalidaceæ.

"(No. 35. Table Mountain, Cape Town. August 23, 1919.) An unusually large white-flowered oxalis. The leaves form a mat on the soil surface, and the flowers are almost sessile. It is a very attractive plant. The plants prefer granitic or sandy soil and grow in rather dry locations."

48176. *PARKINSONIA ACULEATA* L. Mimosaceæ.

"(No. 11. St. Vincent, Cape Verde Islands. July 28, 1919.) This is used as a hedge plant almost exclusively in the cultivated and irrigated valley of this island. It is very similar to a form found in Arizona. Seed purses, sold on the streets, are, I believe, made from the seeds of this tree."

48177 and 48178. *PENNISETUM CILIARE* (L.) Link. Poaceæ. Grass.

48177. "(No. 19. St. Vincent, Cape Verde Islands. July 29, 1919.) From the Mattiato Ranch. Seeds of a grass grown for burros and goats, especially where there is a little irrigation."

48178. "(No. 40. Mowbray, Cape Town. August 27, 1919.) *Buffel grass*. A new drought-resistant grass, not so good when green but excellent when ripe. The seeds of this grass were obtained from Starke Bros., Rosebank, near Mowbray, who regard it as one of the best finds. It is said to be especially valuable after it has completed its growth and dried in place, forming an excellent dry feed. It would seem to be best adapted to areas of occasional drought."

48179. *PHYLLANTHUS ACIDUS* (L.) Skeels. Euphorbiaceæ. Iba.
(*P. distichus* Muell. Arg.)

"(No. 12. St. Vincent, Cape Verde Islands. July 28, 1919.) A tree, with compound leaves, called *gruzierra* by the natives and *amloi* by the Hindus. The white fruit, almost an inch in diameter, is very pleasant to the taste and is used for pickles."

48180 and 48181. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha.

48180. "No. 20. Groot Constantia, Cape Province. August 23, 1919.) The Cape gooseberry, said to be introduced from Peru, is a bushy annual, 1 to 2 feet high, which grows as a weed. This is one of the most important jam fruits of the Cape Region, and is served everywhere in hotels and on trains. At Port Elizabeth I



A FAVORITE PROTEA OF CAPE PROVINCE. (*PROTEA LATIFOLIA* R. BR., S. P. I. No. 48183.)

Owing to lack of understanding of the methods of handling plants of this genus, they have been neglected by American horticulturists. As they are among the most beautiful and popular of the many handsome ornamental plants of South Africa, we should make an effort to learn the secrets of their successful culture. The species here shown, which has purple-tinted flower heads 4 inches broad, should be given a careful trial in California and Florida. It probably will not do well on soils which contain much lime. (Photographed by Dr. H. L. Shantz, Kirstenbosch. Cape Province, September 7, 1919; P36117FS.)



A GOOD STREET TREE FOR ARID TROPICAL REGIONS. (*THESPESIA POPULNEA* (L.) SOLAND., S. P. I. No. 48186.)

The island of St. Vincent, one of the Cape Verde group, off the western coast of Africa, has a very dry climate. Practically the only street tree grown there is *Thespesia populnea*. Its use for this same purpose on the moister islands of the Pacific Ocean gives no hint of its ability to thrive under adverse conditions. (Photographed by Dr. H. L. Shantz, St. Vincent, Cape Verde Islands, July 28, 1919; P36039FS.)

48171 to 48189—Continued.

found a few fresh ones in a fruit store. They are rather tart, more so than our ground cherries. This plant should be given a thorough trial in several parts of the United States. On the dry plains and irrigated sections it may do well, and would prove very valuable as an annual fruit crop. It will also probably grow well in southern California and in the Southern States. In the Cape region it is allowed to grow in waste places as a weed, but it is highly prized by all."

48181. "(No. 38. Mowbray, Cape Town. August 27, 1919.) This grows as a weed everywhere in the Cape region, and makes most delicious jam. It is short lived and dies each winter, although there is no frost here."

48182. *PROTEA LANCEOLATA* E. Mey. Proteaceæ.

"(No. 131. Kirstenbosch, Cape Province. August 25, 1919.) A very attractive shrub with light-yellow flowers and pale yellowish green foliage, not as striking as some of the other Proteas when in flower, but of decided value as a decorative plant. The habit and requirements are the same as those of the other Proteas."

48183. *PROTEA LATIFOLIA* R. Br. Proteaceæ.

"(No. 24. Cape Town, Cape Province. August 24, 1919.) A wonderful Protea, with flowers 4 inches across. The Cape region is noted for its beautiful flowers, and of these none are more popular than the large flowers of the Proteas. The shrubs are 2 to 6 feet high and bear the large flower on the tip of almost every branch. Seeds only are sent, but these are said to grow easily, and it will be possible to test the seedlings on several types of soil. Acid, or at least humus, soils should be tried in Florida and California."

For an illustration of this plant in bloom, see Plate V.

48184. *PROTEA LEPIDOCARPODENDRON* L. Proteaceæ.

"(No. 27. Kirstenbosch, Cape Province. August 25, 1919.) This is one of the most striking plants of this group. The flowers are grouped into large heads 3 inches long, and when open are 4 to 6 inches across. The black-tipped purple bracts, which appear like petals fringed with long black silky hairs, produce a very pleasing effect, and I doubt if a more attractive ornamental could be grown. This plant grows well from seed and should be tried in acid soil. It should grow in the leached soils of southern California; there is little lime, however, in the soil where it grows naturally."

48185. *PROTEA SUSANNAE* Phillips. Proteaceæ.

"(No. 28. Kirstenbosch, Cape Province. August 25, 1919.) A beautiful Protea with a very large flower. The seeds are said to grow readily, and I hope we can succeed in bringing them to flower. If this is once done, their popularity will be assured."

48186. *THESPESIA POPULNEA* (L.) Soland. Malvaceæ.

"(No. 17. St. Vincent, Cape Verde Islands. July 28, 1919.) The street tree of St. Vincent, where it appears to grow without irrigation."

For an illustration of this tree used as a street tree, see Plate VI.

48171 to 48189—Continued.

48187. *URSINIA CAKILEFOLIA* DC. Asteraceæ.

“(No. 26. Kirstenbosch, Cape Province. August 25, 1919.) An unusually attractive plant with fine foliage and a mass of flowers of a very brilliant reddish orange. As a border for walk or driveway it will all but rival *Mesembryanthemum*. This *Ursinia* is an annual, 10 to 12 feet high; it flowers early and continuously and should do well.”

48188. *VIRGILIA CAPENSIS* (L.) Lam. Fabaceæ.

“(No. 30. Kirstenbosch, Cape Province. August 25, 1919.) A handsome quick-growing tree, attaining a height of 20 feet, with a dark rough bark, finely divided compound leaves, and profuse dense racemes of pink sweet-scented flowers. The wood is used chiefly for ox yokes, etc. This plant should be tried in the South and also in the Southwest, especially in California.”

48189. *WATSONIA* sp. Iridaceæ.

“(No. 34. Table Mountain, Cape Town. August 23, 1919.) This plant looks like a *Gladiolus*. The leaves are sword shaped and the flowers very attractive.”

48190. *PYRUS* sp. Malaceæ.

Pear.

From Lawrence, Kans. Cuttings presented by Mr. T. E. Griesa. Received November 26, 1919.

“A medium-sized pear resembling a small *Bartlett* in shape and color. Flesh tender, melting, buttery, nearly sweet, rich, and good to very good in quality. According to Mr. Griesa, the tree was given to him some six years ago by his brother. It was propagated from a seedling tree originating on the farm of Mr. O. H. Ayer, a few miles south of Mr. Griesa's place. Only a few of the trees were propagated, and the one on Mr. Griesa's place is probably the only one in existence at this time. The tree started bearing when it had been set four years. It ripened several fine fruits that year, and last year (1918) was full of bloom, but the fruit was killed by late frost. This year (1919) the tree is loaded with fruit. It was set in an orchard with *Bartlett*, *Clapp Favorite*, and *Douglas*. The *Bartlett* and *Clapp Favorite* have long since died of fire-blight, but the new variety and the *Douglas* show no signs of blight. According to Mr. Griesa, the tree is as large as apple trees set in the same orchard fourteen years ago.

“The pear was submitted to Messrs. H. P. Gould and C. P. Close, of the Office of the Horticulturist, United States Department of Agriculture. The description of the fruit given above is in part quoted from a statement from Mr. Close. Mr. Gould reports that externally the pear resembles a *Bartlett* but internally it looks more like a *Kieffer*.” (B. T. Galloway.)

48191. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From Sydney, New South Wales. Presented by Mr. George Valder, under-secretary and director, Department of Agriculture. Received October 14, 1919.

“Sorghum known as ‘Saccalene.’ This is not a perennial sorghum, but it can be cut several times during the season, fresh growth being made from the roots. It yields a heavier crop than any other sorghum yet tested by this department and retains its succulence for a longer period after being frosted.

It will be found that this crop gives the best results when grown on good soil where the rainfall is fairly high or where irrigation can be practiced. Sowing should be made early in the spring." (*Valder*.)

48192 to 48213.

From La Reole, Gironde, France. Presented by Mrs. Rachel Severin. Received October 2, 1919. Quoted notes by Mrs. Severin.

"French and Spanish selected cereals which grow well in the Aquitanian region from Bordeaux and Toulouse to Nantes and Paris."

48192 and 48193. *AVENA STERILIS* L. Poaceæ. Oats.

48192. "*Ligowo* × *Brie* (cross between *Ligowo* and *Brie*)."

For previous introduction of *Ligowo*, see S. P. I. No. 612.

48193. "*Noire Maroc* (Black oats of Morocco)."

48194 and 48195. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

48194. "*Staf Tunisie* (*Staf* barley from Tunis)."

48195. "*Mecknes Maroc* (*Mecknes* barley from Morocco)."

48196 and 48197. *SECALE CEREALE* L. Poaceæ. Rye.

48196. "*Limousin* (*Limousin* rye). From the central plateau region of France."

48197. "*Landes* (*Landes* rye). From the Province of Landes."

48198 to 48207. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

48198. "*Bladette*. From hillside land near Toulouse."

48199. "*Blé Blanc de La Reole* (*La Reole* white); very successful in alluvial lands near Bordeaux."

48200. "*Blé Blanc de La Reole* (*La Reole* white); bearded sport from near Bordeaux."

48201. "*Blé de Gironde* (*Gironde* wheat), from near Bordeaux; very good for loam."

48202. "*Blé Rouge de Bordeaux* (red wheat from Bordeaux); successful through all the world."

48203. "*Blé Tendre* (tender wheat); from Tunis."

48204. "*Candeal de Sovia* (*Sovia* wheat); from Spain."

48205. "*Candeal fino* (fine wheat); from Spain."

48206. "*Rieti* × *Japhet* No. 30."

"One of the parents, *Rieti*, is one of the finest of the Italian wheats; it is very early, productive, and rust resistant; it can stand very high temperature, and does not lodge." (*Schribaux*.) This was crossed by Prof. Schribaux, of Paris, with the yellow-grained *Japhet*.

For previous introduction of the parent wheats, see S. P. I. Nos. 17994, 23628, 26084, and 44949.

48207. "*Rouge d'Alsace* × *Bordeaux*. Crossed by Prof. Schribaux."

"*Rouge d'Alsace* is a winter wheat and *Bordeaux* is a very productive wheat; it is hoped that the hybrid will combine resistance to cold with great yields." (*Schribaux*.)

48192 to 48213—Continued.

48208 to 48212. *TRITICUM DURUM* Desf. Poaceæ. Durum wheat.

48208. "*Carita de ratón* (rat's delight); from Spain."

48209. "*Enano de Jaen* (dwarf from Jaen); from Spain."

See S. P. I. No. 47888 for previous introduction.

48210. "*Fanfarron* (bully); from Spain."

48211. "*Raspinegro* (rough black); from Spain."

See S. P. I. No. 47890 for previous introduction.

48212. "*Rubio enlargado d'Atlemtege* (large red from Atlemtege); from Spain and Portugal."

48213. *TRITICUM TURGIDUM* L. Poaceæ. Poulard wheat.

"*Poulard d'Australie* (Australian Poulard); grows very well in southwestern lands."

48214. *LITCHI CHINENSIS* Sonner. Sapindaceæ. Lychee.
(*Nephelium litchi* Cambess.)

From Santa Barbara, Calif. Cuttings presented by Mr. E. W. Hadley.
Received October 7, 1919.

"Cuttings from an interesting lychee tree growing in a garden on East Sola Street, Santa Barbara, Calif., lately owned by Mr. E. W. Hadley. There are only two lychee trees (of which we have records) that have fruited in the open in the United States, this one and one near Tampa, Fla. These cuttings were obtained for propagation, so that plants can be tried in other sections to see if this variety is more frost resistant than those previously tested." (*Peter Bisset.*)

48215 to 48220.

From Vereeniging, Johannesburg, Transvaal. Presented by Mr. J. Burt Davy. Received October 8, 1919. Quoted notes by Mr. Davy.

48215. *ACACIA SIEBERIANA* DC. Mimosaceæ.

"(No. 136.) *Kecombwi*. A deciduous tree, on alluvial flats on the outer fringe of river vegetation."

A shrub or small tree, from Portuguese West Africa, reaching a height of 30 feet, with a very beautiful dilated crown and whitish flowers. The very hard, acute, white spines are 2 to 3 inches long, and the wood is hard and whitish. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, pt. 1, p. 313.*)

48216. *MARKHAMIA PAUCIFOLIOLATA* Wildem. Bignoniaceæ.

"(No. 177.) From Elizabethville."

A tree with compound leaves and young branches yellow pubescent, native to the Belgian Kongo. The oval stipules are sharp-pointed, and the campanulate flowers are in dense panicles. The wood is useful for construction work. (Adapted from *Wildeman, Études sur la Flore du Katanga, p. 131.*)

48217. *TACCA PINNATIFIDA* Forst. Taccaceæ. Fiji arrowroot.

"(No. 131.) On termite nests."

Found from India to tropical Australia and Polynesia, also in Madagascar. This perennial plant will live even on sandy shores, and it is not unlikely that it will endure a temperate climate. From the tubers

48215 to 48220—Continued.

the main supply of the Fiji arrowroot is prepared. The *Tacca* starch is much valued in medicine, and is used particularly in cases of dysentery and diarrhea. Its characteristics are readily recognized under the microscope. From the leaves and flower stalks light bonnets are plaited. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 521.)

48218. *XYLOPIA* sp. Annonaceæ.

"(No. 135.) From Cataract Island, Zambezi River."

48219. (Undetermined.)

"(No. 169.) *Kafieefi*. From Elizabethville."

48220. (Undetermined.)

"(No. 128.) *Moolembwe*."

48221 and 48222.

From Buitenzorg, Java. Purchased from Mr. R. D. Rands, Department of Agriculture. Received October 15, 1919.

48221. *CANARIUM INDICUM* Stickm. Balsameaceæ. Kanari.
(*C. commune* L.)

A large ornamental tree, native to Java and grown to a great extent in that country as a shade tree and for its edible nuts. The tree is notable for its remarkable buttressed trunk and ornamental yellow blossoms. The dark-purple fruits are produced in great abundance almost throughout the year. The kernel of the fruit is edible and is used in the production of oil for burning and other purposes; it has a very high food value, and the proportion of fat is 72.3 per cent as against 65 per cent in the case of walnuts, filberts, and hazelnuts. The nuts are very hard and require a hammer to break them. (Adapted from *Milsum, Fruit Culture in Malaya*, p. 55.)

For previous introduction, see S. P. I. No. 20808.

48222. *CANARIUM MOLUCCANUM* Blume. Balsameaceæ. Bageja.

"A large tree, native of the Moluccas, quite similar in growth to the kanari, but having larger nuts about halfway in size between the kanari and pili; the kernels are of excellent flavor and quality." (*Philippine Agricultural Review*, vol. 9, p. 203.)

48223. *EUGENIA AQUEA* Burm. f. Myrtaceæ.

From Matania el Saff, Egypt. Presented by Mr. Alfred Bircher, of the Middle Egypt Botanic Station. Received October 17, 1919.

A medium-sized tree, with smooth evergreen foliage and large white flowers; native to the Moluccas and Ceylon. It is planted extensively in Bengal and Burma. The fruit, which is about the size of a loquat and flattened at the end, is either pale rose colored or white and has an aromatic taste. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 283.)

48224. *AVENA NUDA* Hoejer. Poaceæ. Oats.

From Nanking, Kiansu, China. Presented by Mr. John H. Reisner, University of Nanking. Received October 21, 1919.

"Hull-less oats a small field of which I found on a recent trip to Shansi. The oats were found near Kih sien, on the central Shansi plain." (*Reisner*.)

51113 to 51115.

From Rawalpindi, Punjab, India. Seeds presented by Dr. R. R. Stewart, Gordon College. Received July 7, 1920. Quoted notes by Doctor Stewart.

51113. *TULIPA STELLATA* Hook. Liliaceæ. Tulip.

A very delicate species which is certainly a valuable acquisition to our gardens. It is remarkable for the narrowness of the petals and their spreading out almost flat in the middle of the day when the sun shines, and closing again in the evening. The small broadly ovate bulb, capped with three or four lanceolate segments thickly lined with fulvous hair, flowers in two months. In India, where the plant is common, the bulbs are frequently eaten by natives and are sold for that purpose in some of the bazaars. The terete, glaucous stem, nearly 2 feet high in the cultivated species, bears four to five linear-lanceolate leaves. The dainty, erect flowers, oblong in the bud, are solitary or two upon the same stem. The lanceolate, concave petals are pure white, with a faint tinge of pink and green at the points, on the outside, and bright yellow at the base within. Three of the petals are longer than the rest and sometimes have a single tooth. (Adapted from *Curtis's Botanical Magazine*, pl. 2762; and *Walt, Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 203.)

51114. *ZIZIPHUS JUJUBA* Mill. Rhamnaceæ. Jujube.
(*Z. sativa* Gaertn.)

"Wild jujube bought in market. A form widely cultivated in the Punjab."

51115. *ZIZIPHUS* sp. Rhamnaceæ. Jujube.

"Wild jujubes bought in market."

51116 to 51125.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received July 14, 1920. Quoted notes by Mr. Popenoe.

51116. *BUNCHOSIA GLANDULIFERA* H. B. K. Malpighiaceæ.

"(No. 412. July 1, 1920.) *Cereza*. Plants presented by Carlos Wercklé, of El Coyolar, Costa Rica.

"A small, slender tree, reaching about 20 feet in height. It bears short racemes of yellow flowers which are followed by elliptic, bright-red fruits about 1 inch long. Mr. Wercklé thinks the fruit nearly as good in quality as that of the Japanese persimmon; in my opinion, however, it is considerably inferior. The thin skin surrounds a large elliptic seed and a small quantity of red pulp which, like that of the persimmon, must not be eaten until it is very soft."

51117. *CASTILLA NICOTYENSIS* O. F. Cook. Moraceæ. Nicoya rubber.

"(No. 416a. July 1, 1920.) Seeds collected from a tree in the doorway of the ranch house at El Coyolar, Costa Rica. It is a Central American rubber tree, said to be a more vigorous grower than *Castilla elastica* and less exacting in its soil requirements."

For previous introduction, see S. P. I. No. 42386.

51116 to 51125—Continued.

51118. *Cordia nitida* Vahl. Boraginaceæ.

"(No. 415a. July 1, 1920.) Seeds of *muñeco*. The *muñeco* is commonly planted in and about San Jose as a street tree, or as an ornamental tree in parks and gardens. It reaches a height of 40 feet, and forms a broad, shapely crown of deep-green foliage. It is quick growing and rather soft wooded, so that limbs are sometimes broken off by storms. The orange-red fruits, which are produced in clusters 4 to 6 inches across, are individually the size of small cherries. They are not edible, but since they remain on the tree a long time they are of decorative value."

51119. *Crotalaria verrucosa* L. Fabaceæ.

"(No. 413a. July 1, 1920.) Seeds of a plant found abundantly at Puntarenas, in abandoned or uncultivated places close to the seashore. It seems less woody in character than *Crotalaria retusa*, and likely, therefore, to make a better crop for use as a green manure. It reaches about 18 inches in height, and bears attractive white and pale-blue flowers. Evidently it is an annual. It should be tested as a cover crop in the South, especially on sandy lands."

51120. *Cupania* sp. Sapindaceæ.

"(No. 414a. July 1, 1920.) *Paraiso*. Seeds presented by Carlos Wercklé, of El Coyolar, Costa Rica. Mr. Wercklé states that this is a handsome ornamental tree, indigenous in the region about Coyolar, and probably not described botanically. It should be tested in southern Florida."

51121. *Paspalum notatum* Fluegge. Poaceæ.

Grass.

"(No. 418a. July 1, 1920.) *Gengibrillo*. Seeds presented by Alfredo Quiros. From sea level up to 5,000 feet this is probably the most important of the pasture grass cultivated in Costa Rica; above 5,000 or 6,000 feet it is injured by frost and is not, therefore, extensively planted. In the lowlands it is especially esteemed; it makes a compact sod, crowding out weeds and other grasses, and affording an abundance of nourishing green forage, eaten readily by both horses and cattle. It rarely grows more than a foot in height, and where pastured constantly does not often reach more than 6 inches. For trial in the Everglades region of southern Florida."

For previous introduction, see S. P. I. No. 37996.

51122. *Polakowskia tacaco* Pittier. Cucurbitaceæ.

"(No. 422. July 1, 1920.) Seeds of *tacaco*. Among Costa Ricans this is one of the most popular of all vegetables, and it is regularly sold in the market of San Jose during a large part of the year.

"In general character the *tacaco* suggests the chayote. The plant, which is commonly cultivated on arbors or allowed to climb over trees, has a leaf resembling that of the chayote in shape but differing in texture; and the fruit, which falls to the ground when mature, is about 3 inches long, elliptic in outline. Frequently it has a few short spines about the base; elsewhere it is smooth. When boiled it is considered to have a richer flavor than the chayote, but the flesh is somewhat fibrous.

"The *tacaco* should be tried in the chayote-growing regions of the United States. Doubtless it would be possible to reduce the proportion of fiber and otherwise improve the fruit by selection."

For previous introduction, see S. P. I. No. 47329.

48230 to 48261—Continued.

48243. COMBRETUM IMBERBE Wawra. Combretaceæ.

"(No. 68.) A large tree with hard heavy wood; from Victoria Falls."

A very tall tree, from the forests of Benguela, with red-veined, white scaly leaves and dense racemes of small, long-stemmed flowers followed by dark-red 4-winged scaly fruit. (Adapted from *Sitzungsberichte der Mathematisch, Naturwissenschaftlichen Classe der Kaiserlichen Akademie der Wissenschaften*, vol. 38, p. 556.)

48244. COMBRETUM RHODESICUM Baker. f. Combretaceæ.

"(No. 61.) A small tree, growing in granitic soil in the scrub at Bulawayo."

A Rhodesian tree with round branches and small leaves, light colored below. The dense spikes of flowers are followed by fruits having 4 light-brown scarious wings. (Adapted from *Journal of Botany*, vol. 37, p. 435.)

48245. COPAIVA COLEOSPERMA (Benth.) Kuntze. Cæsalpiniaceæ.
(*Copaifera coleosperma* Benth.)

"(No. 72.) *Mosowri, masibi*. The Rhodesian mahogany."

A handsome evergreen tree which is one of the best timbers of Southern Rhodesia. The aril used to be eaten by Bushmen. The district of Kosibi is named after the tree."

"The red aril is used in preparing a nourishing drink." (*Oliver, Flora of Tropical Africa*, vol. 2, p. 314.)

48246. COPAIVA MOPANE (Kirk) Kuntze. Cæsalpiniaceæ.
(*Copaifera mopane* Kirk.)

"(No. 82.) *Mopane*. One of the best timbers of Southern Rhodesia."

A fine forest tree, native to Lower Guinea and the Mozambique district, with a trunk often 2 feet in diameter. The kidney-shaped seeds are most extraordinary, the testa being deeply wrinkled with large resinous glands like blisters. This tree is the ironwood of the country, abundant in dry clay plains, forming large monotonous shadeless forests. The leaves fold up at the junction of the leaflets and turn down at the node; they are thus shadeless during the dry season at noon. The excellent resin-colored blood-red wood is called "Sangue de Drago false;" it is heavy, durable, and difficult to work. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 315, and *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 303.)

48247. DIOSCOREA sp. Dioscoreaceæ. Yam.

"(No. 74.) Bulbils from Victoria Falls."

48248. DIPLORHYNCHUS MOSSAMBICENSIS Benth. Apocynaceæ.

"(No. 55.) A small tree which yields a rubber in quantity but of doubtful quality. The tree is plentiful, but not many were seen bearing fruit. From Rhodesdale, on a magnesian dike."

"Native to Lower Guinea, the Belgian Kongo, and Mozambique district." (*Oliver, Flora of Tropical Africa*, vol. 4, pt. 1, p. 107.)

48249. FLACOURTIA sp. Flacourtiaceæ.

"(No. 88.) A thorny evergreen tree with edible fruits, from Cataract Island, Zambezi River."

48250. GOSSYPIUM sp. Malvaceæ.

"(No. 63.) A small tree from Matoppo Hills, Matabeleland."



THE MAHOGANY BEAN, A VALUABLE AFRICAN TIMBER TREE. (PAHUDIA QUANZENSIS (WELW.) PRAIN, S. P. I. No. 48253.)

This tree, sometimes called "Rhodesian mahogany" or "pod mahogany," occurs in southeastern Africa. Its wood very much resembles that of true mahogany (*Swietenia mahagoni*), but is of coarser grain. As an ornamental tree it may have value for shade, its large pealike flowers are very attractive in appearance, and the handsomely marked beans are used for necklaces. The species is probably somewhat drought resistant, not particular as to soil, and may stand a little frost after it has attained a growth of a few years. (Photographed by Dr. H. L. Shantz, Lourenco Marques, Mozambique, October 25, 1919; P36567FS.)

48230 to 48261—Continued.

48251. *KIRKIA ACUMINATA* Oliver. Simaroubaceæ.

"(No. 65.) A deciduous tree which grows readily from poles planted in the ground during the rainy season. It is common near Bulawayo and north to Broken Hill."

A glabrous tree with compound leaves, 6 inches to 1 foot long, clustered at the ends of the branches. The numerous flowers are in broad leafy panicles and are followed by dry 4-angled fruits which separate into four cocci suspended from a persistent carpophore. Native to Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 1, p. 311.)

48252. *LONCHOCARPUS CAPASSA* Rolfe. Fabaceæ.
(*L. violaceus* Oliver.)

"(No. 60.) *Olitamuzi*, i. e., kraal-spoiler, because the wood is not considered suitable for brush kraals. From Bulawayo, Matabeleland."

A tree 20 to 30 feet high, with leaves toward the ends of the branches and twigs. The purplish pink sweet-scented flowers are in dense racemes. Native to Mozambique and Abyssinia. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 2, 263, and *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 281.)

48253. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.
(*Afzelia quanzensis* Welw.)

Mahogany bean.

"(No. 66.) *Mukamba, mwandi*. A deciduous tree from Victoria Falls."

An unarmed tree, 15 to 30 feet in height, with coriaceous leaflets and large papilionaceous flowers. Native to Lower Guinea, south-central Africa, and the Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 302.)

For previous introduction, see S. P. I. No. 12360.

An illustration of this tree is shown in Plate VII.

48254. *PENNISSETUM* sp. Poaceæ.

Grass.

"(No. 87.) *Vleis* [temporary lakes] near Shangani, southern Rhodesia."

48255. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.

"(No. 83.) Said to be poisonous. From Victoria Falls."

48256. *PTEROCARPUS ANGOLENSIS* DC. Fabaceæ.

"(No. 64.) *Mukwa, um vagazi*. *Kajat* from granitic kopjes [hillocks] Matoppo Hills, Matabeleland. Valuable timber which grows well from cuttings or poles stuck in the ground during the wet season; poles cut off and planted about 8 years ago are now trees about 1 foot in diameter. Something like 60 per cent of the cuttings are said to strike."

48257. *RICINODENDRON RAUTANENII* Schinz. Euphorbiaceæ.

"(No. 67.) *Megongo, n'goma*. A handsome large deciduous tree, with smooth bark of a purplish brown tint. Sometimes called the *Zambezi almond*. The nuts are said to be edible; the shell is very hard, and the seed is said to be most difficult to germinate. From the Zambezi basin at Victoria Falls."

48230 to 48261—Continued.

The *Manketti* [or megongo] nuts are the product of a euphorbiaceous tree which grows in the South African veld, forming vast forests near the Omaramba River. The kernels of the nuts are oily and are eaten by the natives. The kernels yielded 57.2 per cent of bright-yellow liquid oil, which had a saponification value of 191.5 and an iodine value of 133.6 per cent; it is therefore a semidrying oil. It appears that this oil can be used for food. It is, however, very difficult to extract the kernels, owing to the softness of the latter and the extreme hardness of the shells.

The pulpy mesocarp should have a moderate nutrient value, but trials would be necessary before it could be definitely recommended as a cattle feed. Its composition is as follows: Moisture, 16.6 per cent; crude protein (of which 6.5 is true protein and 1.4 other nitrogenous substances), 7.9 per cent; fat, 1.62 per cent; carbohydrates, etc. (by difference), 65.4 per cent; cellulose, 3.0 per cent; ash, 5.5 per cent. Nutrient ratio, 1:8.6; food units 89. (Adapted from *The International Review of the Science and Practice of Agriculture*, January, 1918.)

48258. *TERMINALIA SERICEA* Burchell. Combretaceæ.

"(No. 69.) From Victoria Falls."

A tree attaining a height of 82 feet, with a dense round or flat-topped crown and silvery silky leaves and inflorescence. It is a widely distributed and variable species, extending along the southeastern coast of Africa, Bechuanaland, German Southwest Africa, and Angola. It is known as *napini*, or *gum-copal tree*. The wood is very hard, burns well, and is described as oily; it is said to make good posts, durable underground, only the sapwood, of which there is very little, being eaten by termites, or "white ants." The heartwood is yellow, with darker streaks; it takes a good surface and shows well under varnish; it is used for furniture, agricultural implements, carts, and domestic utensils. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 53, p. 67.)

48259. *TERMINALIA* sp. Combretaceæ.

"(No. 98.) From basaltic formation near Victoria Falls."

48260. *XYLOPIA* sp. Annonaceæ.

"(No. 92.) Fruit said to be edible. From Victoria Falls."

48261. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

"(No. 58.) A good, hard timber from Bulawayo, Matabeleland, making good, durable fence posts. The fruit is edible."

An edible-fruited tree, 20 to 30 feet in height, native to Upper and Lower Guinea, Abyssinia, and the Mozambique district. The fruit is said to be used for making bread which tastes like gingerbread and also for the preparation of a pleasant beverage. In South Africa a paste made of the leaves is applied to glandular swellings. A decoction of the root is used in lumbago and taken internally for all scrofulous diseases and for swollen glands of the neck.

The wood is tough and used chiefly for wagon work. The seeds are used by Mussulmans for rosaries. In Cape Colony the plant is sometimes used for hedges. It requires deep alluvial soil. (Adapted from *Holland, Useful Plants of Nigeria*, p. 162, and *Oliver, Flora of Tropical Africa*, vol. 1, p. 380.)

48262 to 48282.

From Darjiling, India. Presented by Lieut. Col. A. T. Gage, director of the Botanical Survey of India, through Mr. G. H. Cave, curator, Lloyd Botanic Garden, Darjiling. Received October 21, 1919.

48262. BASELLA RUBRA L. Basellaceæ.

A succulent, herbaceous, freely branched climber, native to Bengal, and cultivated throughout India. It is sometimes spoken of as the Malabar nightshade. The juice of the leaves is used in native medicine for catarrhal affections of children, and the leaves and stems are used as a potherb (made into a curry) by natives of all classes. Scarcely a village exists, in Bengal at least, where a hedgerow covered with this favorite potherb may not be seen. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 404.)

For previous introduction, see S. P. I. No. 45026.

48263. BUCKLANDIA POPULNEA R. Br. Hamamelidaceæ.

An evergreen tree, attaining a height of 80 feet, native to the eastern Himalayas, Khasi Hills, and the hills of Martaban, at altitudes of 3,000 to 8,000 feet. The wood is rough, grayish brown, moderately hard, close grained, and durable. It is much used in Darjiling for planking and for door and window frames. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 545.)

For previous introduction, see S. P. I. No. 47649.

48264. BUDDLEIA ASIATICA Lour. Loganiaceæ.

A large evergreen shrub, native to Bengal, Burma, and southern India, ascending to altitudes of 4,000 feet, chiefly found in second-growth forests, deserted village sites, and savannas. The young branches are tomentose; the leaves, 2 to 4 inches long, are glabrous above, whitish tomentose beneath; the small white odorous flowers are borne in dense axillary spikes. The wood is gray and moderately hard. (Adapted from Cooke, *Flora of Bombay*, vol. 12, p. 183, and Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 546.)

For previous introduction, see S. P. I. No. 47650.

48265. CLEMATIS NAPAULENSIS DC. Ranunculaceæ. Clematis.

A slender, nearly glabrous, woody climber, native to the temperate Himalayas from Gurhwal to Bhutan. The flowers are numerous on short pedicels which bear, at the middle, connate bracts forming a 2-lipped cup in which the bud is sessile. These 4-petaloid oblong sepals are silky outside. The flat, margined achenes are hairy. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 2.)

48266. DENDROCALAMUS HAMILTONII Nees. and Arn. Poaceæ. Bamboo.

The common bamboo of northern Bengal and Assam, with culms sometimes attaining a height of 80 feet, much curved and bent, forming thickets of nearly impenetrable growth. They are used for building purposes and for making mats and baskets. The young shoots are eaten in Sikkim. The flowers are purple; and sporadically flowering clumps, especially from injured specimens, are common. (Adapted from Gamble, *Manual of Indian Timbers*, p. 752.)

For previous introduction, see S. P. I. No. 43287.

48262 to 48282—Continued.

48267. *DILLENIA PENTAGYNA* Roxb. Dilleniaceæ.

A conspicuous deciduous tree, found in dry forests and open grasslands, as well as in the more open sal forests in northern India. Except the teak, perhaps, it has the largest leaves of any of the Indian forest trees, for they often reach 2 feet in length. The flowers, which appear in the hot season, are yellow, in fascicles on the branches, and the fruit is small and fleshy. The flower buds and fruit are eaten and have a pleasant acid flavor. The leaves are sometimes used for plates, and for thatching huts. The wood is durable and has much the character of beech; it makes good charcoal; it is used for construction purposes, for posts, joists, etc. (Adapted from *Gamble, Manual of Indian Timbers*, p. 6.)

For previous introduction, see S. P. I. No. 39109.

48268. *DUABANGA SONNERATIOIDES* Buch.-Ham. Lythraceæ.

A lofty deciduous tree, with light-brown bark which peels off in thin flakes; native to Assam, Chittagong, Burma, Nepal, and eastern Bengal (ascending to 3,000 feet). The gray, yellow-streaked wood is soft, seasons well, takes a good polish, and neither warps nor splits. Canoes cut out of the green wood are used at once, even when liable alternately to wet and the heat of the sun. In northern Bengal and Assam it is now very extensively used for tea boxes; it is also made into cattle troughs and other ordinary domestic utensils. The seeds are small, but germinate freely, so that for planters this is one of the most useful of trees. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 196.)

48269. *ERIANTHUS HOOKERI* Hack. Poaceæ.

Grass.

A tall perennial grass with a large, silky, densely branched panicle of villous, rusty-red spikelets; native to the Sikkim Himalayas, Bhutan, and Calcutta. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 125.)

48270. *GYNURA NEPALENSIS* DC. Asteraceæ.

A tall, handsome shrubby species, hoarily pubescent, leafy, with many corymbose heads of yellowish or purplish flowers. The leaves are 3 to 7 inches long and hoary pubescent on both surfaces. Native to the temperate Himalayas from Kumaon to Bhutan at altitudes ranging from 2,000 to 5,000 feet and in the mountains near Moulmein, at Martaban at altitudes of 4,000 to 5,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 333.)

For previous introduction, see S. P. I. No. 39116.

48271. *LOBELIA PYRAMIDALIS* Wall. Campanulaceæ.

Lobelia.

An herb, 2 to 7 feet in height, native to the Khasi Mountains, Pegu, and at altitudes ranging from 3,000 to 9,000 feet in the Himalayas from Gurhwal eastward. The widely branched stem bears glabrous linear leaves and many-flowered racemes of purple-rose or whitish flowers. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 426.)

For previous introduction, see S. P. I. No. 47707.

48272. *MAESA CHISIA* D. Don. Myrsinaceæ.

An evergreen shrub or small tree, with thin reddish bark and soft light-brown wood, common over large areas of country in the Darjiling Hills, coming up gregariously on hill slopes which have at one time

48262 to 48282—Continued.

been cultivated and then abandoned. For affording protection to planted trees of more valuable timber, put out in lines or in patches cut in the shrubby growth, I can imagine nothing better. Native to the eastern Himalayas, from Nepal to Bhutan, at 4,000 to 6,000 feet, and in the Khasi Hills at 3,000 to 5,000 feet. (Adapted from *Gamble, Manual of Indian Timbers*, p. 438.)

For previous introduction, see S. P. I. No. 47711.

48273. *MICROMELUM PUBESCENS* Blume. Rutaceæ.

A small evergreen tree, native to eastern and northern India, Ceylon, and the Andamans. The bark is thin and white, and the hard close-grained wood is yellowish white. (Adapted from *Gamble, Manual of Indian Timbers*, p. 125.)

48274. *OSBECKIA STELLATA* Don. Melastomaceæ.

An ornamental shrub from 2 to 7 feet high, with reddish branchlets and membranous leaves 2 to 6 inches in length. The delicately beautiful lilac-rose flowers have four ovate ciliate petals $1\frac{1}{2}$ inches across. The conspicuous stamens are incurved, and the calyx tube is pale green with green-stalked stellate hairs, each bearing eight reddish rays. (Adapted from *Curtis's Botanical Magazine*, pl. 8500.)

For previous introduction, see S. P. I. No. 39126.

48275. *PREMNA SCANDENS* Roxb. Verbenaceæ.

A tree 20 to 40 feet in height, or a large climber, native to northeast Bengal, Sikkim, Bhutan, and Assam. The leaves are 11 inches long and 4 inches wide, borne on short petioles. The small greenish or yellowish flowers are in 4-inch to 10-inch lax, dense, compound corymbs. The small globose drupes are tubercled. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 573.)

48276. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ.

(*P. puddum* Roxb.)

A large deciduous tree, with brilliant rose-red or white flowers, native to the Himalayas from the Indus to Assam, between 2,500 and 7,000 feet, to the Khasi Hills, and to the hills of Upper Burma. It is often cultivated. The brown shining bark peels off in thin horizontal layers and the moderately hard, scented wood has a pretty shining silver grain. The wood is used in the Punjab Himalayas for walking sticks, which are made from saplings or from root suckers; in Darjiling it is occasionally used for furniture. The seeds are strung in rosaries. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 314, and *Gamble, Manual of Indian Timbers*, p. 313.)

48277. *RUBIA CORDIFOLIA* L. Rubiaceæ.

Madder.

A herbaceous perennial which grows abundantly in the Punjab Himalayas from 3,200 to 10,000 feet, and in the Suliman Range. Like the European madder, the root furnishes a red dye, a mixture of alizarin and purple bronze but less lasting than that of the European madder. It is considered astringent, purgative, emetic, and useful in skin diseases. The fleshy fruit is used to overcome obstructions of the liver. (Adapted from *De Lanessan, Les Plantes Utiles des Colonies Françaises*, p. 625, and *Stewart, Punjab Plants*, p. 116.)

For previous introduction, see S. P. I. No. 47780.

48262 to 48282—Continued.

48278. *RUBUS ELLIPTICUS* J. E. Smith. Rosaceæ.

Raspberry.

A large thorny shrub, native to all Indian hill regions over 4,000 feet. The fruit is yellow and has the flavor of the raspberry; it is commonly eaten out of hand and is also made into preserves in the Himalayas; it is one of the best of the wild fruits of India. (Adapted from *Gamble, Manual of Indian Timbers*, p. 317.)

For previous introduction, see S. P. I. No. 47781.

48279. *THYSANOLAENA MAXIMA* (Roxb.) Kuntze. Poaceæ.

Grass.

A large grass, with broad bamboolike leaves and dense panicles of very small flowers, found in shady places in the forests almost throughout India. The leaves are used for fodder and the flower panicles for brooms, especially in Hindu temples. (Adapted from *Gamble, Manual of Indian Timbers*, p. 742.)

For previous introduction, see S. P. I. No. 14922.

48280. *TRACHYCARPUS EXCELSUS* (Thunb.) Wendl. Phœnicaceæ.

"The Chinese fan or coir palm, cultivated in gardens in southern Shensi and southern Kansu as an ornamental tree, reaches a height of 30 to 40 feet. Withstands successfully winter temperatures, unprotected of -12° C., as happened in Huihsien on November 1, 1895, when all the palms around there died. Of value as a fine ornamental garden and park tree for all such parts of the United States where the mercury does not go much below 10° F. Chinese name *Taung shu*, meaning 'coir-palm tree.'" (*Frank N. Meyer*.)

For previous introduction, see S. P. I. No. 44670.

48281. *TRACHYCARPUS MARTIANUS* (Wall.) Wendl. Phœnicaceæ.

A tall unarmed, fan-leaved palm, native to the temperate Himalayas from Nepal eastward, the Khasi Hills, Munnipore, and Burma, all at altitudes above 4,000 feet. The slender trunk, 20 to 30 feet tall, is for the most part naked annulate, clothed beneath the crown with persistent leaf sheaths; the young parts are covered with soft scurfy hairs. The rigidly leathery leaves, 4 to 5 feet in diameter, are cut about half way down into linear 2-lobed segments; the petiole is $1\frac{1}{2}$ to $2\frac{1}{2}$ feet long, the sheath leaving stiff erect fibers. The nodding spadix bears yellow flowers; the pistillate flowers are sessile and solitary. The bluish drupe is half an inch long. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 436.)

For previous introduction, see S. P. I. No. 47814.

48282. *TRIUMFETTA TOMENTOSA* Boj. Tiliaceæ.

An herb or undershrub with a hispid stem and variable leaves, 4 by 3 inches, stellate hairy above, pubescent beneath. The yellow flowers are in dense interrupted spikes and the hispid fruit, the size of a large pea, is covered with straight spines. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 394.)

For previous introduction, see S. P. I. No. 47818.

48283 to 48285.

From Lamac, Bataan, Philippine Islands. Presented by Mr. P. J. Wester, agricultural adviser, Lamac Experiment Station. Received October 25, 1919. Quoted notes by Mr. Wester.

48283. CITRUS HYSTRIX DC. Rutaceæ.**Cabuyao.**

"Seed of a variety of *Citrus hystrix*, with oblate and very juicy fruits. It is very resistant to the citrus canker and should therefore be of more than ordinary value in breeding canker-resistant citrus fruits."

For previous introduction and description, see S. P. I. No. 40824.

48284. FLACOURTIA JANGOMAS (Lour.) Gmel. Flacourtiaceæ. Paniála. (F. cataphracta Roxb.)

"A small spiny tree, the fruits of which may be made into an excellent jelly. It should prove hardy in southern Florida."

48285. SPONDIAS PINNATA (L.) Kurz. Anacardiaceæ. (S. mangifera Willd.)**Lanno.**

"Should prove hardy in southern Florida."

A rather tall deciduous tree of wide distribution, bearing yellowish, sweet, edible fruits, about the size of a large cherry. It is rare in cultivation. (Adapted from *The Philippine Agricultural Review*, vol. 9, p. 230.)

48286. FRAGARIA DALTONIANA J. Gay. Rosaceæ. Strawberry.

From Calcutta, India. Presented by Mr. Percy Lancaster. Received October 25, 1919.

A somewhat hairy, slender perennial herb, with filiform runners and petiolulate few-teethed leaflets. The solitary white flowers are followed by curious, bright-scarlet fruits an inch long and half an inch broad, with but little flavor. Native to the Sikkim Himalayas. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 345.)

48287 to 48289.

From Cape Town, Cape Province. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 26, 1919. Quoted notes by Dr. Shantz.

48287. SOLANUM ACULEASTRUM Dunal. Solanaceæ.

"(No. 22. Cape Town. August 24, 1919.) A large, coarse-fruited, prickly shrub, 8 feet high, with fruits 2 inches in diameter. The natives use bits of the fruit for allaying toothache in hollow teeth."

48288. SOLANUM SODOMEUM HERMANNI Dun. Solanaceæ.

"(No. 23. Cape Town. August 24, 1919.)" A shrubby, spiny *Solanum* with purple flowers followed by globose fruits 1½ inches in diameter, which are at first green variegated with white, and finally yellow. Native to Europe. (Adapted from *Thiselton-Dyer, Flora Capensis*, vol. 4, sec. 2, p. 96.)

48289. SOLANUM sp. Solanaceæ.

"(No. 36. Kirstenbosch, Cape Province. August 25, 1919.) A large-fruited *Solanum*; smooth fruit."

48290 to 48301. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.*(M. utilissima Pohl.)***Cassava.**

From Antigua, British West Indies. Cuttings presented by the curator,

Botanic Station, Tortola, Virgin Islands. Received October 27, 1919.

48290. Bitter.**48296. Pacho 3.****48291. Blancita.****48297. Pacho 4.****48292. French.****48298. Paloma.****48293. Helada 15.****48299. Red Greenaway.****48294. Negrita.****48300. Rodney.****48295. Negrita 12.****48301. White Greenaway.****48302. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ. Loquat.**

From Altadena, Calif. Budwood collected by Wilson Popenoe, Agricultural

Explorer of the Bureau of Plant Industry. Received October 30, 1919.

"*Tanaka*. This excellent loquat was introduced into the United States some years ago by Dr. Fairchild, but the material obtained by him has apparently been lost, and the buds sent herewith have been taken from a tree growing at the West India Gardens, which was grown from budwood sent from Algeria by Dr. L. Trabut in 1911.

"*Tanaka* is a large loquat, noted for its fine flavor and excellent keeping qualities. It is oval or nearly round in form, deep orange in color, with meaty orange-colored flesh. The season of ripening is late, and it is probably because of this that the variety has not been planted commercially in California. In recent years, however, it has become apparent that some of the late-fruited varieties, such as *Thales* (considered by some to be identical with *Tanaka*, and certainly very closely allied to this variety), may be cultivated profitably, if in a region well suited to their growth." (*Popenoe*.)

48303. ASPARAGUS sp. Convallariaceæ.

From Kenkelbosch, Cape Province. Roots collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received October 31, 1919.

"(No. 73. September 8, 1919.) A broad-leaved, nonspiny form valuable for decoration. An unusually pretty and attractive vine, abundant in the 'bush,' where the soil is dry for many months in the year." (*Shantz*.)

48304 to 48426.

From China. Collected by Mr. G. Forrest and presented by Mr. H. J. Elwes, Colesborne, England. Numbered October 31, 1919. Quoted notes by Mr. Forrest.

"The 'A' numbers are the serial numbers under which the seeds were sent out. Where a Forrest number is also given, Mr. Forrest had reason to suppose that the seed was that of a plant similar to one from which he had taken herbarium specimens perhaps at a considerably earlier date." (Extract from letter of the Director of Laboratory, Royal Horticultural Society Gardens, October 5, 1920.)

48304. ARDISIA CRISPA A. DC. Myrsinaceæ.

"A 842. Forrest No. 13687."

A red-fruited shrub, 10 to 20 feet in height, found with oak scrub at altitudes ranging from 6,000 to 7,000 feet, near Luchang, northwest Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 52.)

48304 to 48426—Continued.

48305. *BUDDLEIA CARYOPTERIDIFOLIA* W. W. Smith. Loganiaceæ.

"A 841."

A shrub, 5 to 6 feet high, native to western China. The foliage is remarkable because of the large irregular crenations of the leaves; the attractive flowers are pale lavender. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 8, p. 179.)

48306. *BUDDLEIA GLABRESCENS* W. W. Smith. Loganiaceæ.

"A 843."

A robust shrub, 4 to 9 feet high, with fragrant deep blue-lavender flowers with rose-tinged tubes and throats. It is a native of Yunnan, China, where it grows in open situations at altitudes of 8,000 to 9,000 feet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 9, p. 85.)

48307. *CLEMATIS STANLEYI* Hook. Ranunculaceæ.

Clematis.

An erect shrubby clematis from the Transvaal, with very variable foliage and flowers. In the native state the flower stems are 2 to 3 inches long, while in cultivation they reach a length of 8 to 10 inches; the flowers vary from 1 to nearly 3 inches in diameter, and in color from white to pinkish purple. The roots are fleshy. (Adapted from *Curtis's Botanical Magazine*, pl. 7166.)

48308. *DAPHNE PAPHYRACEA* Wall. Thymelæaceæ.

"A 10. Forrest No. 13769."

A shrub 4 to 8 feet high, growing with scrub in side valleys on the eastern flank of the Tali Range at altitudes between 9,000 and 10,000 feet, western Yunnan, China. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 258.)

48309. *GAULTHERIA FRAGRANTISSIMA* Wall. Ericaceæ.

"A 844. Forrest No. 16622."

A very fragrant evergreen shrub or small tree, found in the mountains of India from Nepal eastward to Bhutan. In summer it is covered with white or pinkish flowers which are followed by beautiful racemes of blue-purple fruits. (Adapted from *Curtis's Botanical Magazine*, pl. 5984.)

48310. *LONICERA HENRYI* Hemsl. Caprifoliaceæ.

Honeysuckle.

"A 716. Forrest No. 14955."

"*Lonicera henryi* is a native of western China and is valuable and interesting, for, with the exception of *Euonymus radicans* and *Vincaminor*, it is the only vine with evergreen leaves which is hardy in this climate. It has long dark-green pointed leaves and axillary clusters of flowers which are rose colored when they first open, but soon become orange-red; they are without odor. On the slopes of its native mountains this plant clammers over rocks and bushes; and, like other clinging honeysuckles, it will do best when allowed to grow naturally in this way." (*Arnold Arboretum Bulletin of Popular Information*, July, 1916.)

48311. *LONICERA PILEATA* Oliver. Caprifoliaceæ.

Honeysuckle.

"A 713. *Lonicera ligustrina yunnanensis*. Forrest No. 15327."

This form is now referred to *L. pileata*, differing from the species, according to Mr. Rehder, only in the very small suborbicular to broadly

48304 to 48426—Continued.

ovate, thickish leaves. *L. pileata* is a much-branched, low, evergreen shrub from central and western China, about 1 foot high, with slender branches, oblong-lanceolate dark-green leaves, half an inch to an inch long, and pale-yellow flowers in almost sessile pairs. (Adapted from *Curtis's Botanical Magazine*, pl. 8060.)

48312. *LORANTHUS* sp. Loranthaceæ.

Mistletoe.

"A 720."

48313. *MECONOPSIS EXIMIA* Prain. Papaveraceæ.

"A 735. Forrest No. 15089."

A very handsome biennial with nodding, deep blue-purple flowers which have grayish yellow anthers. It is found in open stony pasture lands in southeastern China at altitudes ranging from 12,000 to 14,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1915, p. 159.)

48314. *MECONOPSIS HENRICI* Bur. and Franch. Papaveraceæ.

"A 733. Forrest No. 14234."

An annual or biennial low poppylike plant from western China with numerous scapes which bear large purple-violet flowers about 3 inches across, with orange anthers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 2019.)

48315 to 48318. *MECONOPSIS INTEGRIFOLIA* (Maxim.) Franch. Papaveraceæ.

A hardy stout-stemmed biennial, from 1½ to 3 feet high, native to Yunnan and the northwestern part of Kansu, China, where it ascends to an altitude of 13,000 feet. The plant is densely clothed with long, silky, yellowish brown hairs. The numerous linear-lanceolate leaves are 6 inches to a foot long, and the beautiful yellow flowers are 5 or 6, or sometimes even 10, inches in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 8027.)

48315. "A 723. From the Mekong-Salwin Divide."

48316. "A 730. Type."

48317. "A 731. From Tali Shan."

48318. "A 734. Forrest No. 14678."

48319. *MECONOPSIS PSEUDOINTEGRIFOLIA* Prain. Papaveraceæ.

"A 14."

A biennial Chinese poppy, from 1 to 3 feet in height, with 1-flowered scapes bearing very large, bright-yellow flowers from 4 to 8 inches across. It comes originally from southwestern Tibet. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 4, p. 2018.)

48320. *MECONOPSIS RUDIS* Prain. Papaveraceæ.

"A 727."

One of the so-called *blue poppies* which impart a curious charm to the stony alpine tracts in southwestern China at altitudes ranging from 11,000 to 16,000 feet. The plant reaches a height of 1 to 3 feet and has prickly leaves and stems; the attractive flowers, in racemelike cymes, are bright blue or purplish blue, and over 2 inches wide. (Adapted from *Curtis's Botanical Magazine*, pl. 8568.)

48304 to 48426—Continued.

48321. *MECONOPSIS SPECIOSA* Prain. Papaveraceæ.

"A 726."

A very fine Chinese species, of which Mr. George Forrest says in *Gardeners' Chronicle* (3d ser., vol. 63, p. 31): "The only species in Yunnan which is scented. It is deliciously fragrant, the fragrance resembling that of our own Dutch hyacinths."

48322. *MECONOPSIS WALLICHII* Hook. Papaveraceæ.

"A 736. Forrest No. 15883."

A beautiful hardy biennial from the mountains of Sikkim, India, where it raises its glorious pyramids of mauve-colored flowers to a height of 7 feet or more. In winter the well-developed gray-green rosettes of leaves are very attractive. (Adapted from *The Garden*, vol. 79, p. 175.)

48323. *MECONOPSIS* sp. Papaveraceæ.

"A 724."

48324. *MECONOPSIS* sp. Papaveraceæ."A 725. Related to *M. speciosa*."48325. *MECONOPSIS* sp. Papaveraceæ."A 728. Related to *M. henrici*."48326. *MECONOPSIS* sp. Papaveraceæ."A 729. Related to *M. lancifolia*."48327. *MECONOPSIS* sp. Papaveraceæ.

"A 732. Forrest No. 14118."

48328 and 48329. *MELIOSMA CUNEIFOLIA* Franch. Sabiaceæ.

A graceful deciduous shrub from Yunnan, China, where it is found in the Lichiang Mountains at altitudes of 8,500 to 10,000 feet above the sea, in open sunny situations. It reaches an average height of about 24 feet, has long narrow leaves, and fragrant, soft, creamy-white flowers which are produced in great abundance. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 59, p. 279.)

48328. "A 739. Forrest No. 14873."

48329. "A 740."

48330. *MILLETTIA* sp. Fabaceæ.

"A 703."

48331. *NEILLIA* sp. Rosaceæ.

"A 746. Forrest No. 14342."

48332. *OSMANTHUS DELAVAYI* Baill. Oleaceæ.

"A 838. Forrest No. 15373."

A beautiful evergreen shrub from southwestern China, whose dense axillary clusters of pure-white fragrant flowers render it a decidedly attractive ornamental. The dark-green ovate leaves are an inch or so long and have serrate margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 55, p. 257.)

48333 and 48334. *OSTRYOPSIS DAVIDIANA* Decaisne. Betulaceæ.

A deciduous shrub, 3 to 5 feet high, native to North China. It forms a rounded bush resembling a hazel, but has the fruits in clusters of 8 to

48304 to 48426—Continued.

12 at the ends of the twigs. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 116.)

48333. "A 12."

48334. "A 840."

48335. *PARASYRINGA SEMPERVIRENS* (Franch.) W. W. Smith. Oleaceæ.
(*Syringa sempervirens* Franch.)

"A 834,"

An evergreen shrub, up to 9 feet in height, found originally in thickets in mountainous regions of Yunnan, China, ascending to 12,000 feet above sea level. The foliage is leathery, and the fragrant flowers are light creamy yellow. (Adapted from *Transactions and Proceedings of the Botanical Society of Edinburgh*, vol. 27, p. 96.)

48336 and 48337. *PHILADELPHUS DELAVAYI* L. Henry. Hydrangeaceæ.
Mock orange.

A vigorous Chinese shrub, native to the Province of Yunnan, with large thick leaves. It produces, toward the middle of May, an abundance of pure-white flowers in racemes. On the lower side of each petal is a longitudinal, median, pale-yellow stripe, visible through the transparent petal. This plant is said to be even more hardy than *P. coronarius*. (Adapted from *Revue Horticole*, vol. 75, p. 13.)

48336. "A 835."

48337. "A 837."

48338. *POLYGONUM FORRESTII* Diels. Polygonaceæ.

"A 827. Forrest No. 14425."

A low herbaceous plant with a long creeping rootstock, found on hillsides in Yunnan, China. It is from 2 to 4 inches in height, and has white or creamy-white flowers. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 258.)

48339. *POLYGONUM LICHANGENSE* W. W. Smith. Polygonaceæ.

"A 805."

An erect, somewhat woody plant 2 to 4 feet high, native to Yunnan, China, where it grows on the margins of mixed forests at altitudes of 10,000 to 11,000 feet. The flowers are creamy white. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 8, 197.)

48340. *POLYGONUM POLYSTACHYUM* Wall. Polygonaceæ.

"A 806. Forrest No. 14237."

A shrubby, vigorous perennial from the Himalayas, where it ascends to 14,000 feet. It grows about 5 feet high, and in late autumn produces large terminal panicles of white flowers. It does best in moist places. (Adapted from *Gardeners' Magazine*, vol. 52, p. 929, and from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2742.)

48341. *POLYGONUM* sp. Polygonaceæ.

"A 808."

48342. *POTENTILLA FRUTICOSA* L. Rosaceæ.

"A 803. Forrest No. 14989. A form related to *P. veitchii* but very dwarf."

48343. *POTENTILLA VEITCHII* Wilson. Rosaceæ.

"A 804. Lichiang Range; flowers white."

A charming evergreen shrub of neat rounded habit, 3 to 5 feet in height, native to upland thickets above 6,000 feet altitude, western China.

48304 to 48426—Continued.

The numerous flowers, three-fourths of an inch to 1½ inches wide, are usually solitary at the ends of short twigs. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 50, p. 102.)

48344. *POTENTILLA* sp. Rosaceæ.

"A 798."

48345. *POTENTILLA* sp. Rosaceæ.

"A 799."

48346. *POTENTILLA* sp. Rosaceæ.

"A 800."

48347. *POTENTILLA* sp. Rosaceæ.

"A 801."

48348. *POTENTILLA* sp. Rosaceæ.

"A 802."

48349. *POTENTILLA* sp. Rosaceæ.

"A 836. Forrest No. 15205. A form related to *P. fruticosa*, with deep-orange flowers."

48350. *PRIMULA BATHANGENSIS* Petitm. Primulaceæ.

Primrose.

"A 781. Forrest No. 14247."

A Chinese primula from western Szechwan, China, where it was originally found growing near hot springs. The numerous clusters of yellow flowers are borne on weak scapes and the heart-shaped leaves are intensely green. (Adapted from *Bulletin Herbarium Boissiere*, vol. 8, p. 365.)

48351 and 48352. *PRIMULA BEESIANA* Forrest. Primulaceæ. Primrose.

A remarkable Chinese primula, found growing close to the snow line in the mountainous parts of Yunnan. Under favorable circumstances the scape rises to a height of more than 3 feet, and produces its whorls of showy flowers in the early summer. The flowers are a glowing velvety purple with conspicuous yellow eyes. The plant is very free flowering and quite hardy. (Adapted from *Bees, Guaranteed Hardy Plants, 1913-14*, p. 11.)

48351. "A 789. Forrest No. 15359."

48352. "A 762."

48353. *PRIMULA BELLA* Franch. Primulaceæ.

Primrose.

"A 771. From Tali Range."

In damp, sandy, mountain pasture land on the Mekong-Salwin Divide, western Yunnan, China, this attractive primula was originally collected. It is little more than 2 inches in height, but bears beautiful pale-rose or deep bluish rose flowers with greenish white eyes, faintly fragrant. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 4, p. 225.)

48354. *PRIMULA BULLEYANA* Forrest. Primulaceæ.

Primrose.

"A 747. Lichiang Range."

This beautiful Chinese primula comes from the Lichiang Mountains in Yunnan, where it grows nearly to the snow line. It forms a stout plant, covered, at the end of May and the beginning of June, with splendid orange-scarlet flowers; the stems of these flowers reach a length of 20 inches, making them excellent for cut flowers. This plant prefers a semi-

48304 to 48426—Continued.

shaded, damp situation, and appears to be entirely hardy. (Adapted from *Bees, Guaranteed Hardy Plants, 1913-14, p. 11*, and from *Florists' Exchange, vol. 36, p. 996*.)

48355. PRIMULA CALLIANTHA Franch. Primulaceæ.

"A 776. Forrest No. 15795."

A plant from 4 to 9 inches in height, with fragrant flowers which are deep rose-lavender with a green, thick, and fleshy eye and tube. The plant thrives in moist, open situations on mountain meadows on the summit of the Tali Range, at altitudes of 12,000 to 13,000 feet, in western Yunnan, China, from September through October. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 7, p. 84*.)

48356. PRIMULA sp. Primulaceæ.

"A 782. Forrest No. 14403."

Received as *Primula chrysopa*, for which a place of publication has not been found.

48357. PRIMULA DELAVAYI Franch. Primulaceæ.

Primrose.

"A 756. From Tali Shan."

A primula from southwestern China, with thin, papery, roundish leaves about 3 inches long, which appear after the flowers. The bright-purple hairy flowers are borne on 1-flowered, densely hairy scapes which are loosely enveloped up to the middle with brownish, very broad scales. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2797*.)

48358 and 48359. PRIMULA DRYADIFOLIA Franch. Primulaceæ.

Primrose.

A smooth, small-leaved Chinese primula, with long scapes bearing clusters of three to five nearly sessile, violet flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2799*.)

48358. "A 783. Forrest No. 14814."

48359. "A 785. Forrest No. 15160."

48360. PRIMULA DUBERNARDIANA Forrest. Primulaceæ.

Primrose.

"A 780. Forrest No. 14232."

A handsome primula from southeastern Tibet, where it forms dense cushions 1 to 2 feet in diameter, in dry situations on the ledges and in the clefts of mountain cliffs, at altitudes ranging from 8,000 to 9,000 feet. The flowers are a beautiful shade of pale rose, with bright-yellow eyes. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 4, p. 221*.)

48361. PRIMULA FORRESTII Balf. f. Primulaceæ.

Primrose.

"A 749. From Lichiang Range."

A handsome primula found originally in the mountains of northwestern Yunnan, China, at altitudes of 9,000 to 11,000 feet. The foliage is densely coated with glandular hairs, and in the fresh state has a peculiar, but not unpleasant, aromatic odor. The flowers are large and numerous, of a deep shade of orange, and fragrant. The plant is said to be hardy but can not stand dampness, being adapted to sunny and dry situations. In its native country it is found in greatest luxuriance in the crevices and on the ledges of dry limestone cliffs. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 45, p. 274*.)

48304 to 48426—Continued.

48362. PRIMULA FRANCHETII Pax. Primulaceæ.

Primrose.

"A 774. Forrest No. 14065."

A plant found in moist rocky situations on mountain meadows, at altitudes ranging from 10,000 to 12,000 feet, on the Mekong-Salwin Divide to the northwest of Tsekou Mission, southeastern Tibet. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 7, p. 51.)

48363. PRIMULA GIRALDIANA Pax. Primulaceæ.

Primrose.

(P. muscarioides Hemsl.)

"A 769."

A Chinese primula originally found in open grassy situations in the mountains of Yunnan. The rather fleshy, light-green crenate leaves are 4 to 5 inches long, and the purplish blue or almost violet flowers occur in densely capitate spikes. (Adapted from *Curtis's Botanical Magazine*, pl. 8168.)

48364. PRIMULA LICHANGENSIS Forrest. Primulaceæ.

Primrose.

"A 772. Forrest No. 13976."

A handsome plant from the Lichiang Mountains, Yunnan, China, where it reaches a height of 6 to 14 inches, growing on ledges and boulders in dry shady places. The fragrant flowers vary from light rose to almost crimson, with greenish yellow eyes. The foliage is very variable. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 50, p. 473.)

48365. PRIMULA LITTONIANA Forrest. Primulaceæ.

Primrose.

"A 770."

A beautiful new primula from Yunnan, China, where it grows on mountain meadows at an altitude of 10,000 to 11,000 feet. From a tuft of grayish green, hairy leaves rises the scape, 1 to 2 feet in length, ending in a dense spike, sometimes 5 inches long. The blood-red bracts and calyxes of the flowers form a wonderful contrast with the purple flowers. The plant is perfectly hardy at the Royal Botanic Garden, Edinburgh. (Adapted from *Gardener's Chronicle*, 3d ser., vol. 46, p. 15.)

48366 to 48369. PRIMULA NIVALIS Pall. Primulaceæ.

Primrose.

An Asiatic primula, found from the Caucasus to the Himalayas, northward to the Baikal and Dahuria regions. The stout scape, 3 to 10 inches in height, bears a many-flowered umbel of erect purple or white flowers. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 5, p. 2808.)

48366. "A 753. Form from Tali Shan."

48367. "A 755. Forrest No. 15383. An undescribed form."

48368. "A 775. Forrest No. 14108. An undescribed form."

48369. "A 779. Forrest No. 14217. An undescribed form."

48370. PRIMULA PINNATIFIDA Franch. Primulaceæ.

Primrose.

"A 787. Forrest No. 15229."

A hardy alpine primula from Yunnan, China, where it grows in grassy places on mountain slopes as high as 12,000 feet above sea level. Almost immediately upon the disappearance of the snow the beautiful, blue, fragrant flowers appear. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 4, p. 224.)

48304 to 48426—Continued.

48371 and 48372. *PRIMULA PSEUDOSIKKIMENSIS* Forrest. Primulaceæ. Primrose.

This primula from western China differs from *P. sikkimensis* in having shorter leaves and larger flowers. It grows to a height of 12 to 18 inches, and has fragrant, bright canary-yellow flowers. In its native habitat it is found in the crevices and on ledges of limestone cliffs, at altitudes ranging from 11,000 to 12,000 feet. (Adapted from *Bailey, Standard Cyclopedia of Horticulture*, vol. 5, p. 2807.)

48371. "A 752."

48372. "A 761. From Lichiang Range."

48373. *PRIMULA PULCHELLA* Franch. Primulaceæ. Primrose.

"A 777. Forrest No. 15722."

An interesting Chinese primula from Yunnan, from 6 inches to a foot in height, with violet, pale-purple, or lilac flowers with purple calyxes. It is a fine plant for the rockery and prefers peaty or sandy soil. The under sides of the leaves, which are not at their full length until after flowering, are covered with a charming golden farina. (Adapted from *Gardeners' Magazine*, vol. 56, p. 962.)

48374 and 48375. *PRIMULA SECUNDIFLORA* Franch. Primulaceæ.

Primrose.

This is one of the finest Chinese primulas; it is a native of the Lichiang Mountains in northwestern Yunnan, where it ascends almost to snow level, 15,000 feet above the sea. On the lower plateaus, at 11,500 feet altitude, this plant forms dense colonies, with scapes up to 14 inches in height. The fragrant flowers are a beautiful shade of deep crimson, faintly tinged with purple, and droop gracefully from the scapes. The calyxes are ruddy purple, marked with white lines along the margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 51, p. 281.)

48374. "A 767. From Lichiang Range." 48375. "A 768."

48376. *PRIMULA SERRATIFOLIA* Franch. Primulaceæ. Primrose.

"A 773. Forrest No. 13959."

A very attractive primula from western China, of which Mr. George Forrest says: "The banks of the streams were covered with the lovely yellow, orange-striped flowers and bright green foliage." (*Gardeners' Chronicle*, 3d ser., vol. 63, p. 32.)

48377 and 48378. *PRIMULA SIKKIMENSIS* Hook. Primulaceæ. Primrose.

Originally found in the Himalayas of Sikkim, India, this is one of the most elegant of the hardy alpine primulas. The drooping, pale-yellow flowers, borne in umbels on slender scapes, always attract the attention because of their beauty. It is excellent for the rock garden, and thrives best in peaty soil. (Adapted from *Gardeners' Magazine*, vol. 52, p. 869.)

48377. "A 750; type. Lichiang Range."

48378. "A 751; type. From Tali Shan."

48379. *PRIMULA SINOPURPUREA* Balf. f. Primulaceæ. Primrose.

"A 778. Forrest No. 14117."

An attractive Chinese primrose, densely covered with a golden farina and bearing large flowers which are violet with white eyes. (Adapted from *Irish Gardening*, May, 1919, p. 77.)

48304 to 48426—Continued.

48380. PRIMULA SPHAEROCEPHALA Balf. and Forr. Primulaceæ. Primrose.

"A 754."

A delicately perfumed primula from southwestern China, which bears small globular heads of attractive purplish flowers. (Adapted from *Bailey, Standard Cyclopedia of Horticulture, vol. 5, p. 2801.*)

48381. PRIMULA VINCIFLORA Franch. Primulaceæ. Primrose.

"A 760."

A perennial Chinese primula, discovered originally in the Province of Yunnan. The oblong leaves are sometimes $3\frac{1}{2}$ inches in length, and the 1-flowered scape is about 3 inches long. The large vincalike purple flowers appear before the leaves in the wild state, but under cultivation both leaves and flowers appear at about the same time. (Adapted from *Curtis's Botanical Magazine, pl. 8564.*)

48382. PRIMULA VITTATA Bur. and Franch. Primulaceæ. Primrose.

"A 786. Forrest No. 15207."

A herbaceous perennial with long narrow leaves up to 6 inches in length. The purple flowers are borne on a stout scape about 8 inches long. This primrose is a native of Szechwan and Yunnan, China. (Adapted from *Curtis's Botanical Magazine, pl. 8586.*)

48383. PRIMULA WARDII Balf. f. Primulaceæ. Primrose.

"A 784. Forrest Nos. 14445 and 14945."

This is a valuable acquisition to horticulture, is one of the freest of growers and seeders, and is most floriferous. It is a foot or slightly more in height and is native to the mountains of Yunnan, China, where it inhabits damp meadows and pastures. The fragrant greenish yellow flowers are blue eyed. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh, vol. 9, p. 59.*)

48384. PRIMULA sp. Primulaceæ. Primrose.

"A 788. Forrest No. 15344."

Received as *P. werringtonensis*, for which a place of publication has not been found.

48385. PRIMULA sp. Primulaceæ. Primrose.

"A 13."

48386. PRIMULA sp. Primulaceæ. Primrose.

"A 748. *P. nivalis* section."

48387. PRIMULA sp. Primulaceæ. Primrose.

"A 757. Related to *P. denticulata*; from Tali Range."

48388. PRIMULA sp. Primulaceæ. Primrose.

"A 758. Related to *P. bella*."

48389. PRIMULA sp. Primulaceæ. Primrose.

"A 759. A form related to *P. nivalis*; from the Lichiang Range."

48390. PRIMULA sp. Primulaceæ. Primrose.

"A 763. From Tali Range."

48391. PRIMULA sp. Primulaceæ. Primrose.

"A 764."

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48392. PRIMULA sp. Primulaceæ.

Primrose

"A 765."

48393. PRIMULA sp. Primulaceæ.

Primrose

"A 766."

48394. PRIMULA sp. Primulaceæ.

Primrose

"A 790."

48395. PRUNUS sp. Amygdalaceæ.

"A 7."

48396. PRUNUS sp. Amygdalaceæ.

"A 8."

48397. PRUNUS sp. Amygdalaceæ.

"A 9."

48398. PRUNUS sp. Amygdalaceæ.

"A 811."

48399. PRUNUS sp. Amygdalaceæ.

"A 845."

48400. PYROLA sp. Pyrolaceæ.

"A 832. Related to *Pyrola forrestii*."

48401. PYRUS sp. Malaceæ.

"A 819."

48402. PYRUS sp. Malaceæ.

"A 820."

48403. PYRUS sp. Malaceæ.

"A 824. From the upper Mekong."

48404. ROETTLERA sp. Gesneriaceæ.

"A 872. From Tali Range."

48405. ANCYLOSTEMON CONVEXUM Craib. Gesneriaceæ.

"A 873. Forrest No. 15930."

A stemless perennial, 48 inches in height, with deep ruddy-orange flowers; found on humus-covered boulders and trees along the eastern flank of the Tali Range, Yunnan, at altitudes of 9,000 to 10,000 feet.

For full technical description, see Notes from the Royal Botanic Garden Edinburgh, vol. 11, p. 235.

48406. BRIGGSIA FORRESTII Craib. Gesneriaceæ.

"A 874. Forrest No. 16096."

A perennial alpine plant, stemless, with pale rosy purple flowers with a tinge of yellow on the lip; found on moist, shady, moss-covered rock along the Shwelee-Salwin Divide, Yunnan, at an altitude of 10,000 feet.

For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 237.

48407. ROSA OMEIENSIS PTERACANTHA (Franch.) Rehd. and Wils. Rosaceæ

(*R. sericea pteracantha* Franch.)

Rose

"A 878."

A robust, much-branched thorny bush, native to western China, where it grows at altitudes of 3,000 to 11,000 feet. Because of its fine single

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white flowers, large red prickles, and bright-red fruits, this is an exceedingly attractive rose. (Adapted from *Curtis's Botanical Magazine*, pl. 8218.)

48408. *RUBUS ALEXETERIUS* Focke. Rosaceæ.

Bramble.

"A 849. Forrest No. 15334."

A spiny shrub, 4 to 7 feet in height, with arched branches, ternate hairy leaves, white flowers, and large yellow edible fruits. It is a native of the eastern flank of the Lichiang Mountains of western China, where it frequents shady rocky situations in pine forests. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 75.)

48409. *RUBUS LINEATUS* Reinw. Rosaceæ.

Bramble.

"A 857."

A very attractive suberect plant with softly pubescent branches and leathery leaves composed of three to five leaflets. It is native to the Himalayas of Sikkim, India, where it grows at altitudes of 6,000 to 9,000 feet. The white flowers grow in short axillary heads and terminal silvery panicles, and the fruits are small and red. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 333.)

48410. *RUBUS LOROPETALUS* Franch. Rosaceæ.

Bramble.

"A 858."

A small, creeping, woody vine with graceful, erect, flowering stems and trifoliate, finely dentate leaves. Its native home is in the forests of Yunnan, China, at an altitude of 3,200 meters (about 10,000 feet). (Adapted from *Franchet, Plantæ Delavayanæ*, p. 203.)

48411. *RUBUS LUTESCENS* Franch. Rosaceæ.

Bramble.

"A 856. Forrest No. 15332."

A small shrub, 9 to 12 inches in height, growing in open grassy places on the eastern slopes of the Lichiang Mountains, Yunnan, China, at altitudes of 10,000 to 11,000 feet. The flowers are a pale canary yellow. (Adapted from *Notes from the Royal Botanic Garden, Edinburgh*, vol. 5, p. 73.)

48412. *RUBUS MICRANTHUS* D. Don. Rosaceæ.

Bramble.

(*R. lasiocarpus micranthus* Hook.)

"A 848. Forrest No. 15329."

A large rambling plant with colored bark covered with powdery bloom. The prickles are small and compressed, and the leathery leaves, 3 to 10 inches long, are almost plaited by the strong straight veins which are very prominent on the glaucous under surface. The deep-pink flowers are small, and the petals rarely exceed the densely woolly calyx. The fruit, less than half an inch in diameter, is hoary and nearly spherical, with numerous dry or fleshy, red or orange drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 339.)

48413. *RUBUS* sp. Rosaceæ.

Bramble.

"A 847. Forrest No. 15328."

48414. *RUBUS* sp. Rosaceæ.

Bramble.

"A 850. Forrest No. 15447."

48415. *RUBUS* sp. Rosaceæ.

Bramble.

"A 851. Forrest No. 15647."

48304 to 48426—Continued.

48416. RUBUS sp. Rosaceæ.

Brambl

"A 852. Forrest No. 15849."

48417. RUBUS sp. Rosaceæ.

Brambl

"A 853. Forrest No. 15900."

48418. RUBUS sp. Rosaceæ.

Brambl

"A 854. Forrest No. 15902."

48419. RUBUS sp. Rosaceæ.

Brambl

"A 855. Forrest No. 16070."

48420. *SILENE MONBEIGII* W. W. Smith. Silenaceæ.

"A 721. Forrest No. 14104."

An ornamental perennial from Yunnan, China; the plant is 6 to 2 inches in height, with the branches of the inflorescences terminating in usually 3-flowered cymes of large pink flowers; found growing on open dry stony situations at an altitude of 7,000 feet.

For full technical description, see Notes from the Royal Botanic Garden, Edinburgh, vol. 11, p. 226.

48421. *SORBUS VILMORINI* C. Schneid. Malaceæ.

Mountain ash

"A 817."

A very interesting shrub from Yunnan, China. Its graceful, finely cut foliage, white or somewhat pinkish flowers, and bright, translucent rosy red fruits make it an attractive ornamental. (Adapted from *Schneider, Handbuch der Laubholzkunde, vol. 1, p. 682.*)

48422. *THERMOPSIS BARBATA* Royle. Fabaceæ.

"A 706. Forrest No. 14099."

A densely shaggy perennial herb, about 1 foot in height, with oblanceolate leaflets and stipules just like the leaflets in texture and shape. It bears racemes of 6 to 12 short-stalked flowers with deep-purple corollas 1 inch long. (Adapted from *Hooker, Flora of British India, vol. 2, p. 62.*)

48423. (Undetermined.) Fabaceæ.

"A 704."

48424. (Undetermined.) Fabaceæ.

"A 705. Forrest No. 15923."

48425. (Undetermined.) Fabaceæ.

"A 707. From Tali Range."

48426. (Undetermined.)

"A 846. From the Mekong-Salwin Divide."

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM NOVEMBER 1
TO DECEMBER 31, 1919.

(No. 61; Nos. 48427 to 49123.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM NOVEMBER 1 TO DECEMBER 31, 1919 (NO. 61; NOS. 48427 TO 49123).

INTRODUCTORY STATEMENT.

This inventory describes a wealth of new plants. There are more than 25 new fruits included in it, more than 10 striking new timber trees, 4 street or windbreak trees, 8 new forage plants, 5 new cereals, 2 drug plants, 4 new vegetables, and more than 125 new ornamental trees, shrubs, or plants. The expense of propagating these and of finding people who are interested in growing them is one which only those who see the thousands of seedlings coming up can appreciate. The knowledge that the success of a single one of them may in time pay for all the trouble and expense turns the trouble of taking care of them into a romance of real fascination.

The maruka grass (*Echinochloa stagnina*, No. 48427) of the Philippines for trial on overflowed lands on the Everglades of Florida is worth emphasizing.

Mr. J. Burtt Davy collected for us, during a short expedition into the region of the Belgian Kongo and Rhodesia, seeds of a remarkable number of interesting economic plants (Nos. 48428 to 48503), among which should be mentioned the knob thorn (*Acacia pallens*, No. 48428, one of the most valuable hardwood trees of the Transvaal; the mootungulu (*Amomum* sp., No. 48433), an edible-fruited plant related to the ginger; the kifumbe (*Bauhinia reticulata*, No. 48437), the pods of which are used for fodder; the mookasje (*Diospyros senegalensis*, No. 48454), a persimmon from the Belgian Kongo; the noxa tree (*Parinari mobola*, No. 48469), a handsome ornamental and useful tree of the Rosaceæ, whose leaves are dark green above and snowy white below and whose edible fruits, the size of a small peach, are produced in such abundance that at the time of ripening a large proportion of the native population is sustained almost exclusively on them; and various cultivated forms of *Uapaca* (Nos. 48490 to 48494), a genus of Euphorbiaceæ, bearing edible fruits which are given native names by the inhabitants of the Kongo.

The yama-momo of Japan or yang mei of China (*Myrica rubra*, No. 48504) is one of the most showy of table fruits, and the fact that specimens of it are growing at Chico, Del Monte, and Berkeley, Calif.,

and Brooksville, Fla., makes it appear desirable to arouse more interest in its culture in America. Its slow growth should not prevent its being planted extensively, for it is a handsome evergreen tree worthy of a place on anyone's lawn.

The Mexican hawthorn (No. 48507), sent by Mr. F. S. Furnivall, with fruits suited for preserves, may add a fruiting and ornamental tree to our Southern States.

When the writer was in Cape Town in 1902, Prof. MacOwan called to his attention the spekboom, an important fodder tree of the karoo, and one of the trees then standing in the gardens was cut down and sent in as cuttings. As a result several trees of this species are now growing in Santa Barbara and San Diego, Calif. If it can be naturalized in this portion of California and become wild, as in South Africa, it will add a valuable forage asset to the hillsides of that region. Dr. Shantz has sent in additional material with most interesting data on this important tree (*Portulacaria afra*, No. 48510).

The late Aaron Aaronsohn called attention to *Crataegus azarolus*, which he had used successfully as a stock for early pears in Palestine. Sr. Pedro Giraud sends in two varieties of it for trial (Nos. 48516 and 48517).

Mr. J. B. Norton, who was sent out as an agricultural explorer to South China, was prevented by ill health from carrying out the program outlined for the work there, but, before he was forced to return, he obtained several interesting things, among which are a new *Actinidia* (No. 48551), related to the yang-tao; the Chinese "olive" (*Canarium album*, No. 48554) which, contrary to general belief, he found has a pleasant, refreshing flavor; a small water-melon with a thin rind (No. 48558), which he suggests might, after improvement, be adapted for serving as an "individual melon;" a lawn and grazing grass (*Eremochloa ophiuroides*, No. 48566) for clay soils possibly as far north as the Carolinas; a new species of legume (*Apios fortunei*, No. 48569), related to our native *Apios tuberosa*, which may be useful in the hybridization and selection of this promising wild legume; a new, attractive pot ornamental (*Trichosanthes cucumeroides*, No. 48585), which the Chinese train on special frames in pots; an ornamental perennial shrubby *Melastoma* (*M. repens*, No. 48718); the "tiger grass" (*Miscanthus sinensis*, No. 48719), from the inflorescence of which excellent brooms are made; and three species of *Rubus* (Nos. 48739 to 48742), promising for hybridization.

Since Bignonias are among the most beautiful of the climbers grown in Florida, a new vine of the same family (*Pandorea ricasoliana*, No. 48624), which so experienced a horticulturist as Dr. Pros-

chowsky says is most strikingly beautiful, producing large bunches of pale-rose blooms, is worthy of emphasis.

With this inventory begins the description of the collections which were made by Dr. H. L. Shantz, agricultural explorer for this office, during the time in which he was attached to the Smithsonian expedition through South and East Africa. As described in the daily papers of the period, Dr. Shantz made, in company with Dr. Raven, of the Smithsonian Institution, a study of the native agriculture of the eastern part of the Belgian Kongo, German East Africa, Portuguese East Africa, and British East Africa, starting at Cape Town and coming out at Cairo. The trip took approximately a whole year and resulted in the collection of invaluable information, photographs, and living material bearing upon the customs of the remarkable agricultural people of these portions of Africa and also in the introduction of hundreds of samples of potentially valuable seeds which should make it possible to discover whether any of the crops grown by these remarkable races have value for the American farmer.

Dr. Shantz finds the m'tsama melon (*Citrullus vulgaris*, No. 48761) of the Kalahari Desert the chief water supply of travelers and dwellers in that region and recommends its further trial in Texas and California. He suggests the use of *Dimorphotheca spectabilis* (No. 48768) for our Great Plains and western desert regions. He found a large-fruited form of *Mimusops* (*M. zeyheri*, No. 48777), which was said to be delicious and would probably grow in southern Texas. He reports *Themeda triandra* (No. 48787) as the most dominant grass of the sweet veldt of Africa. He got a collection of cowpeas (*Vigna sinensis*, Nos. 48791 to 48793) from Cape Province; a new jujube, which is prolific and an attractive ornamental (*Ziziphus* sp., No. 48796); and a beautiful shade tree (*Combretum salicifolium*, No. 48809), which grows along all the watercourses of the arid region around Pretoria and the Orange River region and appears very promising for southern Texas and California.

Regarding the grass called teff (*Eragrostis abyssinica*, No. 48815), the staple hay crop of the high veldt, Dr. Shantz remarks, "It is the most important plant next to corn in the Transvaal. It should grow from Amarillo, Tex., to Judith Basin, Mont." It requires summer rain and therefore is not adapted for cultivation in the Southwest.

Of the kikuyu grass (*Pennisetum clandestinum*, No. 48818) the Union of South Africa Department of Agriculture reports that in wet weather it keeps green all the time, in spite of heavy frosts, and even makes some growth. For soiling dairy cows it is the grass par excellence; it grows almost as rapidly as lucern, yielding four or five cuttings in a season; in food value it is superior to any of our other grasses.

Rhus lancea (No. 48821) Dr. Shantz believes deserves careful study as a shade and timber tree for the southern Texas region, provided it will stand the frosts there.

Since the *Strychnos spinosa* has proved adapted to culture in southern Florida, another species, *S. pungens* (Nos. 48824 and 48825), may do as well. It forms an important element of the food of wild elephants in Mozambique, where the fruits, as large as pummelos, often lie thick on the ground beneath the trees.

Though no commercial variety of corn or sorghum may come directly from them, it is important for the cereal breeder to have for his work the types of these cereals which for centuries, perhaps, have been cultivated by the native African tribes. Under Nos. 48827 to 48832 are described authentic ears of the corn grown by the Basutos, who still control one of the least disturbed sections of South Africa, and under Nos. 48849 to 48859 are described a collection of their sorghums.

Through Mr. F. L. Rockwood, of Bogota, Colombia, comes an introduction of the seeds of the giant Colombian blackberry (*Rubus macrocarpus*, Nos. 48751 and 48752), which was later studied exhaustively by Mr. Wilson Popenoe.

Mr. Edwin Ashby, of Blackwood, South Australia, has contributed a new Australian fruiting bush (*Acrotriche depressa*, No. 48800) suited to regions of light rainfall (15 to 25 inches). It is known as the "native currant." The bushes are not over 2 feet high and bear their fruits in great abundance in masses low down on the main stems. This new fruit seems certainly worthy of the attention of the horticulturists of Texas, Arizona, and southern California.

Through the Forestry Commission of New South Wales a quantity of seeds of the quandong, or "native peach" (*Mida acuminata*, No. 48837), has been obtained. This tree grows in the hotter and drier parts of New South Wales and bears red fruit (from 1½ to 3 inches in circumference), which make excellent conserve and jelly.

Dr. Alvaro da Silveira, of Minas Geraes, Brazil, sends the pusa (*Mouriria pusa*, No. 48838), a new fruit about the size of a wild cherry, which is borne on a small tree 10 feet high and which ought to grow in southern Florida and California.

American children are all familiar with the elderberry, and their faces have more than once been stained by its fruits. Hugo Mulertt, of Wiesbaden, Germany, has discovered a mutation of the European elderberry (*Sambucus nigra*, No. 48839), which has very large berries that instead of being black are greenish golden in color and semi-transparent; they do not stain linen or one's teeth and yet are most excellent when cooked.

Two varieties of Natal grass (*Tricholaena rosea*, Nos. 48843 and 48844) from New Zealand will attract the attention of horticulturists in Florida, where this grass has been such a success.

The Siberian brier (*Rosa laxa*, No. 48845) which, according to Mr. George M. Taylor, of the Florists' Exchange, is an excellent stock for roses on medium and light soils, merits trial by others.

The growing interest in Job's-tears (*Coix lacryma-jobi*) as a cereal and forage crop makes the collection of 16 varieties of this cereal (Nos. 48860 to 48875) which Mr. Thompstone has sent in from Northern Circle, Burma, of unusual importance; and, according to Mr. G. N. Collins, the remarkable collection of varieties of corn (Nos. 48876 to 48921) from the same region, is composed of an entirely new type having waxy endosperms similar to that of a single isolated sort obtained by us from China a number of years ago. For breeding purposes these have very unusual interest.

Through the courtesy of the Director General of Agriculture of the Belgian Congo, M. Leplae, 51 varieties of cassava (*Manihot esculenta*, Nos. 48924 to 48974) have been received for use in the tests of this plant as a vegetable for home use in southern Florida.

Peppermint growers in Michigan will be pleased to have from the agronomist of the Hokkaido Agricultural Experiment Station authentic material of the best variety of Japanese peppermint (*Mentha piperita*, No. 48980).

Petrea volubilis is one of the loveliest of all climbers recently introduced into southern Florida, and another species of the same genus (*P. arborea*, No. 49031) from Colombia, which is a shrub, will meet with a warm welcome there if it approaches the vine in beauty.

Nos. 49032 to 49050 represent seeds which were collected by Mr. Allanson from the exotic fruiting trees and shrubs in the parks of Rochester, N. Y., and presented to us through the courtesy of Mr. Dunbar, director of the parks; and Nos. 49051 to 49123 represent a similar collection from the Arnold Arboretum, through the courtesy of Prof. Sargent, its director. Most of them represent valuable introductions made by the Arboretum.

The botanical determinations of seeds introduced have been made and the nomenclature determined by Mr. H. C. Skeels; and the descriptive and botanical notes have been arranged by Mr. G. P. Van Eseltine, who has had general supervision of this inventory, as of all other publications of this office. The manuscript has been prepared by Miss Esther A. Celandier and Miss Patty T. Newbold.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 8, 1921.

INVENTORY.¹

48427. *ECHINOCHLOA STAGNINA* (Retz) Beauv. Poaceæ.

(*Panicum stagninum* Retz.)

Maruka grass

From Rizal, Luzon, Philippine Islands. Presented by Mr. Adn. Hernandez, Director of Agriculture, Manila, through Prof. C. V. Piper. Numbered November 12, 1919.

"A tall-growing grass much resembling Japanese millet but with longer awns. The grass is native in the Philippines, Africa, India, and probably most of the Indo-Malayan region. It was originally described by Rumphius from specimens from Batavia, Java. The grass commonly grows in shallow water or on very marshy ground. In the Philippines it covers large areas of nearly pure growth, and at the lower end of Laguna de Bay extensive areas are found on a floating mass of vegetable matter. Quantities of this green grass are sold in the Manila market, where it is known as *balili*. The grass has many vernacular names in India, among which are the following: *dul*, *dula*, *pedda-uda*, *nari*, *shangalli-gaddi*, *pedda-woondoo*; in Sunda, *tjampea*; in Ceylon, *maruka*. The common name used in Ceylon is chosen as a common name for this grass, which therefore may be called '*maruka grass*.' *Panicum burgu* Chev., of the Niger River, is considered identical by some botanists, but others regard it at least sub-specifically distinct. The grass is introduced in the hope that it may be valuable on extensive areas of land in Florida periodically overflowed. In most regions it is reported to be not particularly palatable." (Piper.)

48428 to 48503.

From Johannesburg, Transvaal. Collected by Mr. J. Burt Davy. Received October 29, 1919. Quoted notes by Mr. Davy, except as otherwise stated.

48428. *ACACIA PALLENS* (Benth.) Rolfe. Mimosaceæ. **Knob thorn.**

"(No. 207.) From Bosoli Siding, Southern Rhodesia. One of the more valuable timbers for mine props."

A valuable timber tree, 30 feet in height, with a heavy wood, used for making clubs; the timber is exceedingly hard and is durable under ground. It is considered to be one of the most valuable hardwood trees in the Transvaal and is cut extensively for mine props for the Rand. It is

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

48428 to 48503—Continued.

characterized by the presence of prominent warts on the trunk and main branches, whence it has received the vernacular name of *Knopjesdoorn*. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1907, p. 361.)

48429. *ALBIZZIA KATANGENSIS* Wildem. Mimosaceæ.

"(No. 166.) *Musaasi*. A large deciduous tree with valuable timber, from the wireless station, Elizabethville, Belgian Kongo."

A tree from Katanga, Belgian Kongo, the roots of which are used in an infusion as a disinfectant. (Adapted from *Wildeman, Etudes sur la Flore du Katanga*, 4th ser., p. 37.)

48430. *ALBIZZIA* sp. Mimosaceæ.

"(No. 211.) From Choma, Northern Rhodesia."

48431. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

"(No. 120.) *Moobanga*. From near Elizabethville, Belgian Kongo."

48432. *AMERIMNON* sp. Fabaceæ.

(*Dalbergia* sp.)

"(No. 190.) From Elizabethville, Belgian Kongo."

48433. *AMOMUM* sp. Zinziberaceæ.

"(No. 180.) *Mootungulu*. An herb with bright-red fruits, which are eaten by the natives. These fruits have the fragrance of some of the species of *Kaempferia*. Note the similarity of the name to the Zulu name for *Carissa edulis* (*ama-tungulu*); *moo*, like *ama*, is a prefix. From Elizabethville, Belgian Kongo."

48434. *ANTIDESMA* sp. Euphorbiaceæ.

"(No. 194.) Found on termite nests, in Likasi, Kambove, Belgian Kongo."

Received as *Antidesma venosum*, but it does not agree with our material of *A. venosum*.

48435. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.

"(No. 208.) Peanuts grown by natives at Kapiri M'Poshi, Northern Rhodesia."

48436. *BAIKIAEA PLURIJUGA* Harms. Cæsalpiniaceæ. Rhodesian teak.

"(No. 215.) From Victoria Falls, Rhodesia; found growing on a sand veld."

For previous introduction, see S. P. I. No. 48234.

48437 to 48439. *BAUHINIA RETICULATA* DC. Cæsalpiniaceæ.

48437. "(No. 188.) *Kifumbe*. The pods are much relished by cattle. A cattleman in Matabeleland, Southern Rhodesia, grinds them up to mix with concentrates for his pedigreed stock."

A spreading shrub or small tree; from its roots a mahogany-colored pigment is obtained, used by the Manyoro for staining wooden utensils. The stain is most effective; the liquid applied when only slightly diluted, dries rapidly and with a gloss. The shrub grows in quantity also in parts of Toro and Chagwe and is sometimes used in native medicine. (Adapted from *Dawe, Economic Resources of Uganda*, p. 26.)

48438. "(No. 210.) From Elizabethville, Belgian Kongo."

48439. "(No. 205.) From Broken Hill, Northern Rhodesia."

48428 to 48503—Continued.

48440. *BRACHYSTEGIA* sp. *Cæsalpiniaceæ*.

"(No. 132.) *Kaputu*. A common and characteristic tree of the forest. Elizabethville, Belgian Kongo."

48441. *BRACHYSTEGIA* sp. *Cæsalpiniaceæ*.

"(No. 133.) Near to *Kaputu*, but the leaves, pods, and seeds appear to be larger than those of No. 132."

48442. *BRACHYSTEGIA* sp. *Cæsalpiniaceæ*.

"(No. 191.) *Tootoole*. The dominant forest tree at Likasi near Kambove, Belgian Kongo. Formerly used by the natives for making bark-cloth garments."

48443. *CANAVALI GLADIATUM* (Jacq.) DC. *Fabaceæ*. Sword bean.

"(No. 163.) The red-seeded variety. Grown on fences in Elizabethville gardens."

"The sword bean, also known as the knife bean and the saber bean, is cultivated through much of southern Asia and also in Africa. The flowers shade from white to red and the seeds are white, gray, or red. The young pods are prepared after the manner of snap beans and are well flavored and wholesome. It is considered one of the best of the native vegetables in India. The very young pods have but little flavor, but when about half grown their taste suggests mushrooms. They are best when about half grown, as the full-sized green pods are rather fibrous. The mature seeds do not seem to be much used as food, though they lack the strong odor of those of the jack bean. The young pods are used by the Japanese for pickling and are very good for this purpose. All varieties of the sword bean that we have tested are rambling vines, none of them being bushy like the jack bean; they are not so desirable for forage as the latter species, since the foliage is just as bitter and the habit inferior. The Indian variety with red seeds and red flowers has proved very satisfactory as a cover crop in Porto Rico. Cattle are said to graze on the plant there to a limited extent. The plant will develop full-grown green pods as far north as Washington, D. C., but ordinarily the season is not long enough for the seeds to ripen." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 46773.

48444. *CASSIA ABBREVIATA* Oliver. *Cæsalpiniaceæ*.

"(No. 134.) From granitic soils, Matoppo Hills, Matabeleland, Southern Rhodesia."

A shrub or tree, attaining a height of 12 to 25 feet, with bright ocher-colored flowers; native to Mozambique district. (Adapted from *Oliver, Flora of Tropical Africa, vol. 2, p. 271.*)

48445. *CASSIA* sp. *Cæsalpiniaceæ*.

"(No. 193.) A deciduous tree with long pods; found on termite nests at Likasi, near Kambove, Belgian Kongo."

48446. *CASSIA* sp. *Cæsalpiniaceæ*.

"(No. 196.) *Paampi*. Pods used to kill fish. From Likasi, Belgian Kongo."

48447. *COMBRETUM* sp. *Combretaceæ*.

"(No. 104.) An evergreen. From a sand veld at Victoria Falls, Rhodesia."

48428 to 48503—Continued.

48448. COMBRETUM sp. Combretaceæ.

"(No. 152.) Near Kimbembe River, Katanga, Belgian Kongo. Large fruits in dense clusters."

48449. COMBRETUM sp. Combretaceæ.

"(No. 154.) *Kifoola-buto*. Near Kimbembe River, Katanga, Belgian Kongo."

48450. COMBRETUM sp. Combretaceæ.

"(No. 164.) Governor's garden, Elizabethville, Belgian Kongo."

48451. COMMIPHORA sp. Balsameaceæ.

"(No. 57.) A spiny, green-barked, deciduous tree. The trunk or branches, cut off and set in the ground during the rainy season, strike root readily and make good living posts for fences or kraal walls. From Bulawayo, Matabeleland, Southern Rhodesia."

48452. DIGITARIA ERIANTHA Steud. Poaceæ.

Grass.

"(No. 214.) One of our best native sweet-grasses."

Common throughout the eastern half of South Africa, rare in the west. Said to be good fodder for cattle. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 9, pt. 3, p. 429.)

48453. DIOSCOREA sp. Dioscoreaceæ.

"(No. 173.) Bulbils from termite nests at Elizabethville, Belgian Kongo."

48454. DIOSPYROS SENEGALENSIS Perr. Diospyraceæ.

Inkulu.

"(No. 121.) *Mookasje*. Near Elizabethville, Belgian Kongo."

A shrub or tree, from 6 to 40 feet high, bearing edible fruits up to an inch in diameter. The compact, ebonylike wood is useful in many ways and is much thought of by the natives, who call it *monkey guara* in West Africa and *aje* in Abyssinia. The tree is widely scattered, ranging from Abyssinia and Mozambique on the east to the Gold Coast and Angola on the west. (Adapted from *Hiern, Ebenaceæ*, p. 165.)

A fruiting tree of the inkulu is shown in Plate I.

48455. DIPLORHYNCHUS sp. Apocynaceæ.

"(No. 155.) *Muëngwe*. Near the Kimbembe River, Katanga, Belgian Kongo."

48456. ELEUSINE CORACANA (L.) Gaertn. Poaceæ.

Ragi millet.

"(No. 143.) A small-seeded millet cultivated by the natives and chiefly used for the manufacture of pombe, a kind of beer."

A substitute for sorghum, called by the Arabians *teleboon*, by the Abyssinians *toccusso*; it is grown only on the poorest soil and where the ground is too wet to admit a better crop. The grain is very small and generally black and is protected by a thick, hard skin; it has a disagreeable taste and makes only a wretched sort of pap. It yields a yeast that is more fit for brewing than for baking; in fact, not only do the Niam-Niam, who are the principal growers of the Eleusine, but also the Abyssinians make a regular beer by means of it. (Adapted from *Schweinfurth, The Heart of Africa*, p. 248.)

For previous introduction, see S. P. I. No. 46295.



AN AFRICAN PERSIMMON TREE, THE INKULU, IN FULL BEARING. (*DIOSPYROS SENEGALENSIS* PERR., S. P. I. No. 48454.)

One of the most interesting plants found by Dr. H. L. Shantz in the Belgian Kongo is the inkulu. Its fruits are somewhat like our persimmons in general character; when green they are quite astringent, but after becoming fully ripe they have a delicious, sweet flavor. The wood, like that of many other species of *Diospyros*, is hard, dark colored, and of considerable value. Dr. Shantz found marked variation in the size, shape, and flavor of fruits on the wild trees. ~~selection would probably produce varieties of superior merit.~~ The plant is rather drought resistant, but would probably stand very little frost. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, November 22, 1919; P36774FS.)



A DENSE THICKET OF SPEKBOOM, IN THE ADDO BUSH, CAPE PROVINCE.
(PORTULACARIA AFRA JACQ., S. P. I. NO. 48510.)

"One of the most prominent plants of the addo bush, the habitat of the only herd of wild elephants in South Africa, this plant supplies the larger part of their forage. It is relished also by cattle, sheep, and ostriches, and even children enjoy eating the leaves. It may prove adapted to the coast region of southern California, where it is now growing in gardens, and possibly will take the place of the worthless chaparral." (Shantz.) (Photographed by Dr. H. L. Shantz, Kenkelbosch, Cape Province, September 7, 1919; P36202FS.)

48428 to 48503—Continued.

48457. *ERYTHROPHLOEUM GUINEENSE* Don. *Cæsalpiniaceæ*.

"(No. 126.) *Mo'afi*. A large, handsome tree, with bipinnate leaves; yields good timber.

48458. *EUPHORBIA* sp. *Euphorbiaceæ*.

"(No. 170.) From Elizabethville, Belgian Kongo."

48459. (Undetermined.)

"(No. 167.) *Mufungo*. From Elizabethville, Belgian Kongo."

48460. *FLACOURTIA* sp. *Flacourtiaceæ*.

"(No. 88.) A thorny, edible-fruited evergreen tree from Cataract Island, Zambezi River, Mozambique. Probably the same as S. P. I. No. 48249."

48461. *GOSSYPIUM* sp. *Malvaceæ*.

"(No. 109.) Tree from Zimba, Northern Rhodesia."

48462. *GOSSYPIUM* sp. *Malvaceæ*.

"(No. 189.) *Mookollé*. Fruits eaten by the natives. From Elizabethville, Belgian Kongo."

48463. *HIBISCUS* sp. *Malvaceæ*.

"(No. 138.) A fiber plant from Tara, Northern Rhodesia."

48464. *HOLCUS SORGHUM* L. *Poaceæ*. *Sorghum*.
(*Sorghum vulgare* Pers.)

"(No. 158.) Kafir corn. One of the staple foodstuffs of the South Kongo natives. From Katanga, Belgian Kongo."

"Kafir, the most widely grown variety of the grain sorghums, has considerable sugar in the stem, and all of the varieties are valuable as forage and are used extensively as a source of roughage both in the form of fodder and as silage. The yield of forage from the grain sorghums is usually about two-thirds that of the sweet sorghums, but the smaller yield is partly balanced by the higher feeding value of the seed of grain sorghums, which is an important item in both fodder and silage. Yields of 20 to 40 bushels of grain or 3 to 4 tons of fodder may be expected from the better varieties." (*H. N. Vinall*.)

For previous introduction, see S. P. I. No. 47009.

48465. *INTSIA* sp. *Cæsalpiniaceæ*.

(*Afzelia* sp.)

"(No. 149.) *Moopaapi*. From Keemelolo River, Belgian Kongo."

48466. *KHAYA SENEGALENSIS* (Desr.) Juss. *Meliaceæ*.

"(No. 125.) *Mawfwi*. A fine tree. Belgian Kongo."

African mahogany. From west tropical Africa. An important timber and cabinet wood of the Tropics. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 564.)

For previous introduction, see S. P. I. No. 8311.

48467. *MARKHAMIA PAUCIFOLIOLATA* Wildem. *Bignoniaceæ*.

"(No. 157.) *Tenda-kwair* or *Tantanguale*. From Kimbembe River, Katanga, Belgian Kongo."

For previous introduction, see S. P. I. No. 48216.

48468. *MIMUSOPS* sp. *Sapotaceæ*.

"(No. 79.) From Rhodesia."

48428 to 48503—Continued.

48469 to 48471. *PARINARI MOBOLA* Oliver. Rosaceæ.

Nocha or *noxa*. One of the most handsome and useful trees of all the Huilla district, forming extensive forests in the mountainous parts of Morro de Lopollo. It rises to a height of 15 to 40 feet with a maximum diameter of 4 feet; the trunk branches dichotomously and tortuously. The crown is dilated, and the dense, leathery evergreen foliage, deep green above and snowy white beneath, is of extraordinary effect. The wood of the *noxa* is generally employed in Huilla for the manufacture of furniture and other domestic articles and when properly seasoned makes good lumber. But what is most advantageous in this tree is its fruit, since at the time of its ripening, a large proportion of the native population is sustained almost exclusively on *noxas*. So great is the abundance of these fruits in the neighborhood of Lopollo and Humpata that the natives offer large baskets of them to the European colonists at the price of about ten cents for a hundred fruits. The fruits are of the size of a small peach, containing the bulky stone enveloped in a farinaceous-pulpy mass, sweet and of a very agreeable aroma. (Adapted from *Hiern, A Catalogue of Welwitch's African Plants, pt. 1, p. 320.*)

48469. "(No. 110.) *Mobola plum.* From Choma, Northern Rhodesia."

48470. "(No. 114.) From Elizabethville, Belgian Kongo."

48471. "(No. 182.) *Moopundu.* A large tree from Elizabethville, Belgian Kongo; the fruit is eaten by monkeys."

48472. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"(No. 184.) Haricot bean grown by natives in the Belgian Kongo, farther north than Elizabethville. It is supposed to be indigenous to the country."

For previous introduction, see S. P. I. No. 47873.

48473. *PLECTRONIA* sp. Rubiaceæ.

"(No. 168.) From termite nests near Elizabethville, Belgian Kongo."

48474. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.

"(No. 139.) *Moosalië.* Fruit eaten by small antelopes."

"(No. 206.) From Broken Hill, Northern Rhodesia."

48475. *PTEROCARPUS DEKINDTIANUS* Harms. Fabaceæ.

"(No. 115.) *Moolembo.* A rare and valuable timber tree from Elizabethville, Belgian Kongo; yields a kino. [A kino is a dark red or blackish tanniferous product similar to catechu, obtained from various tropical trees. It is commonly used in medicine as an astringent, but less often than catechu in tanning and dyeing.]"

A tree, 16 to 33 feet in height, with pinnate leaves and numerous-flowered racemes. The roundish membranaceous legume is broadly winged. (Adapted from *Engler, Botanische Jahrbücher, vol. 30, p. 89.*)

48476. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"(No. 200.) Growing wild by a railroad track at Baya, Katanga Province, Belgian Kongo."

48477. *SECURIDACA LONGIPEDUNCULATA* Fres. Polygalaceæ.

"(No. 172.) From Elizabethville, Belgian Kongo."

A much-branched divaricate shrub, sometimes attaining a height of 10 feet, native to Upper Guinea, Abyssinia, and Mozambique district.

48428 to 48503—Continued.

The coriaceous leaves are revolute-margined when dry, and the flowers are rose, or shades of purple or violet, or variegated with white, in terminal spreading racemes. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 134.*)

For previous introduction, see S. P. I. No. 47994.

48478. SECURIDACA LONGIPEDUNCULATA PARVIFOLIA Oliver. Polygalaceæ.

“(No. 123.) *Mooyaye*. The bast fiber is used for string. The ash of the root is said to be poisonous.”

This plant has leaves considerably smaller than those of *S. longipedunculata* and its bark affords a valuable flaxlike fiber, the buaze fiber of Zambezi-land. Native to Upper Guinea and Lower Guinea. (Adapted from *Oliver, Flora of Tropical Africa, vol. 1, p. 134.*)

48479. SPOROBOLUS INDICUS (L.) R. Br. Poaceæ. **Grass.**

“(No. 209.) A useful grass, adventive at Burttholm, Vereeniging, Transvaal.”

For previous introduction see S. P. I. No. 47803.

48480. STRYCHNOS UNGUACHA A. Rich. Loganiaceæ.

“(No. 130.) *Zaanza*. A deciduous tree found growing near the river. The pulp surrounding the seeds is eaten by the natives.”

An erect Abyssinian tree with somewhat leathery leaves and dense cymes of small white flowers. The globose fruit, 2 to 2½ inches in diameter, contains 15 to 20 seeds which are three-fourths of an inch long. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 4, sec. 1, p. 534.*)

48481. STRYCHNOS sp. Loganiaceæ.

“(No. 201.) Collected in the woods near Baya, Katanga.”

48482. TERMINALIA SERICEA Burchell. Combretaceæ.

“(No. 137.) From Devonia, Matabeleland, near Bulawayo. Known as *mangwe*; considered one of the best timbers of Matabeleland. It is also called *yellowwood* (not the Cape yellowwood, which is *Podocarpus*).”

For previous introduction, see S. P. I. No. 48258.

48483. TERMINALIA sp. Combretaceæ.

“(No. 151.) From granitic formation, Bulawayo, Matabeleland, Southern Rhodesia.”

48484. TERMINALIA sp. Combretaceæ.

“(No. 174.) From Elizabethville, Belgian Kongo.”

48485. TERMINALIA sp. Combretaceæ.

“(No. 195.) *Mukolwa*. From Likasi, near Kambove, Belgian Kongo.”

48486. TETRAPLEURA sp. Mimosaceæ.

“(No. 204.) A tall leguminous tree from Broken Hill, Northern Rhodesia.”

48487. THEMEDA QUADRIVALVIS (L.) Kuntze. Poaceæ. **Grass.**

“(No. 213.) *Rooi-gras*. The dominant grass of the high veld, on ‘sweet-veld’ areas. From Burttholm, Vereeniging, Transvaal. This is one of our best native grasses.”

48428 to 48503—Continued.

An annual erect grass, native to India and used there for fodder. Introduced elsewhere. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa*, vol. 9, pt. 3, p. 420.)

For previous introduction, see S. P. I. No. 41919.

48488. *TOUNATEA MADAGASCARIENSIS* (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

“(No. 147.) *N'daale*. The pod smells sweet inside, as though containing sugar; it is said to be edible for stock. Lubumbashi River, Belgian Kongo.”

An African tree, 15 to 20 feet high, with spreading, horizontal, or even drooping branchlets. The bark is whitish, and the leaves coriaceous. The space between the outer and inner layers of the coriaceous legume is filled by spongy transverse partitions inclosing resinous gummy matter. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants*, pt. 1, p. 286, and *Oliver, Flora of Tropical Africa*, vol. 2, p. 257.)

48489. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass.

“(No. 127.) Useful hay grass.”

A perennial South African grass which does not survive the winter where the temperature falls much below freezing, so that it is usually cultivated as an annual. The seeds are produced in large clusters about the size and shape of a panicle of oats. In most cases the seed clusters are bright red or rosy crimson in color, and for that reason the grass has sometimes been called “redtop.” It is, however, very different from the common northern grass known as redtop. The plants are killed by a single plowing, and by keeping the land cultivated in other crops through the whole of a single season all the seeds in the ground will have germinated and the young plants will be killed by cultivation, so Natal grass can not become a troublesome weed. Good Natal grass hay is an excellent feed. The stems and leaves are not tough, are very palatable, and are eaten without waste. The stems are so slender that the hay makes an attractive-looking bale and so sells well on the market. The commercial use of the hay has been developed in the past few years, and wherever offered it usually brings the same price as timothy. It is easily cured, is rich in protein, and the average yield is 2½ to 3 tons per acre or about three-fourths of a ton for each cutting. When planted on favorable soil, Natal grass makes such vigorous growth as to choke out most other grasses and weeds. (Adapted from *S. M. Tracy and C. V. Piper*.)

For previous introduction, see S. P. I. No. 41921.

48490 to 48492. *UAPACA NITIDA* Muell. Arg. Euphorbiaceæ.

48490. “(No. 141.) *Musokolobwe*. Fruit edible. From Belgian Kongo.”

A shrub or tree, up to 50 feet high, with an erect trunk and spreading head. The entire rigid, shining leaves are crowded toward the ends of the branches. Native to Lower Guinea, Rhodesia, and German East Africa. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa*, vol. 6, pt. 1, p. 639.)

48491. “(No. 160.) *Musokolobwe* (*makooba*). Fruit edible. From Elizabethville, Belgian Kongo.”

48428 to 48503—Continued.

48492. "(No. 161.) *Musokolobwe* (*kilobo*). This appears to be a third form passing under the vernacular name."

48493. *UAPACA* sp. Euphorbiaceæ.

"(Nos. 122 and 159.) *Moosooku* (*kiloko*). Found in the Belgian Kongo near Elizabethville.

48494. *UAPACA* sp. Euphorbiaceæ.

"(No. 111.) A tree growing near a river at Elizabethville, Belgian Kongo (No. 213); *mahobohobo* from Choma, Northern Rhodesia; and (No. 156) edible fruit of *makombwi* from the Kimbembe River, Katanga, Belgian Kongo."

48495. *VITEX CAMPORUM* Buettn. Verbenaceæ.

"(No. 144.) *Mufutu*. On termite nests at Elizabethville, Belgian Kongo."

A tree, native to Upper Guinea and Lower Guinea, with densely pubescent branchlets and long-stalked, 3-foliolate, somewhat leathery leaves. The hairy campanulate flowers are in dense, axillary cymes. (Adapted from *Thiselton-Dyer, Flora of Tropical Africa, vol. 5, p. 323.*)

48496. *VITEX* sp. Verbenaceæ.

"(No. 175.) *Mufutu*. There is more than one species passing under this name. From Elizabethville, Belgian Kongo."

48497. *ZEА MAYS* L. Poaceæ.

Corn.

"(No. 186.) Native maize of the Belgian Kongo."

48498. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 124.) *Loonkawle*. Growing along rivers and on termite nests in the Belgian Kongo. The fruit is edible but not worth eating. The wood is useful and durable."

48499. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 197.) From Lufisa River, Katanga, Belgian Kongo."

48500. (Undetermined.)

"(No. 106.) From a sand veld, Victoria Falls, Rhodesia."

48501. (Undetermined.)

"(No. 108.) Tree at Zimba, Northern Rhodesia."

48502. (Undetermined.)

"(No. 140.) *Kibobo*. Edible fruit. From Elizabethville, Belgian Kongo."

48503. (Undetermined.)

"(No. 153.) *Mukawba*. A small edible-fruited tree from Kimbembe River, Katanga, Belgian Kongo."

48504. *MYRICA RUBRA* Sieb. and Zucc. Myricaceæ.

From Yokohama, Japan. Purchased from the Yokohama Nursery Co. Received November 1, 1919.

Yama-momo. This very pretty evergreen tree is closely allied to the sweet gale (*Myrica gale*), well known in America. It is a small tree, attaining a height of some 15 to 20 feet, with oblong or lanceolate, dark-green, smooth, and glistening leaves, 3 to 4 inches long. This tree, or large bush, grows especially in the mountains of southern Japan. Its name, *yama-momo*, indicates its habitation, as it means literally "mountain peach." How far north it grows

wild I am not prepared to say. One Japanese authority asserts that it grows all over Japan, a statement I am unable to verify. A specimen in the botanical garden at Tokyo is about 12 feet high, with a very dense, spreading, round head and short trunk. It is very ornamental. The fruit when fully ripe is pleasantly acidulated and juicy. It is apparently made up of a large number of densely crowded sections, quite distinct from each other, but radiating from a small central stone or hard seed. On this specimen the fruit was red, but there are varieties with fruits of different colors. A white-fruited kind, having comparatively large fruit, is said to be of very excellent quality. The tree is commonly propagated by seed, but the Japanese assert that it can also be grafted on the mulberry. It is planted by them partly for fruit and partly for ornament, but not largely for either purpose. The bark is an important dye-stuff. (Adapted from *The American Garden*, vol. 12, p. 82.)

48505 and 48506.

From Transvaal, South Africa. Presented by Mr. George Thorncroft, Winter Bros., Barberton. Received November 7, 1919.

48505. *ALOE PRETORIENSIS* Pole Evans. Liliaceæ.

Aloe pretoriensis is found commonly on many of the kopjes around Pretoria. It grows plentifully on the northern slopes of Mentjes Kop, and extends from here in an easterly and westerly direction on the range of hills composed of the Daasport quartzite; it is also found in the Spekboom Valley near Lydenburg, at Barberton, and along the foot of the Lebombo Range of mountains.

The most distinctive feature of the plant is its tall branched inflorescence, the racemes of which are densely clustered with brightly colored flowers; so conspicuous are they that they form a bright-scarlet patch of color in the landscape and are visible from a considerable distance. The flowers contain a quantity of honey and consequently attract large numbers of brilliant sunbirds. The dense rosettes of tapering leaves, usually withered at the tips, have frequently a very characteristic red hue about them and spring from a stoutish stem 4 to 5 inches in diameter. The stem is dark brown to black in color, extremely rough, and clothed throughout its entire length by the remains of withered leafstalks. At first sight this *Aloe* certainly resembles *A. lineata* in general habit, but on closer examination it is found that the leaves are more narrowly linear-lanceolate than those of *Aloe lineata*. (Adapted from *The Gardeners' Chronicle*, vol. 56, 3d ser., p. 105.)

48506. *CYRTANTHUS THORNCROFTII* C. H. Wright. Amaryllidaceæ.

An African bulbous plant with two long narrow leaves and bearing a short 2-flowered scape. The small light-red flowers are nearly an inch across. (Adapted from *Kew Bulletin of Miscellaneous Information*, p. 421, 1909.)

48507. *CRATAEGUS MEXICANA* Moc. and Sesse. Malaceæ.

From Guadalajara, Mexico. Presented by Mr. F. S. Furnivall, through Mr. Andrew J. McConnico, American consul. Received November 8, 1919.

"White thorn, commonly known as the 'manzanilla' or 'tejecote,' is indigenous to the mountain sections of Mexico and Guatemala; the fruit (a little apple about the size of the American crab apple) is insipid in the raw state but very valuable for making jelly; the tree or shrub may be used with marked success as a stock in budding and grafting apples and pears." (*Furnivall*.)

For previous introduction, see S. P. I. No. 46481.

48508. AMYGDALUS PERSICA L. Amygdalaceæ. Peach.
(*Prunus persica* Stokes.)

From Santa Cruz, Calif. Presented by Mr. George G. Streator. Received November 19, 1919.

"*Indian Blood* peach. A vigorous-growing tree, bearing freestone peaches. The flesh is dark blood red, very juicy, and of very good quality; the skin is greenish gray suffused with red. It is late maturing and looks as though it would make an excellent canning peach." (*Peter Bisset.*)

48509. VOUCAPOUA INERMIS (Swartz) Knuth. Fabaceæ.
(*Andira inermis* H. B. K.)

From Georgetown, Demerara, British Guiana. Presented by Mr. R. Ward, superintendent, Botanic Garden. Received November 25, 1919.

A slow-growing leguminous tree, called in Jamaica *cabbage tree* or *cabbage-bark tree*, on account of its disagreeable odor. It is generally distributed in Porto Rico and is sometimes used in coffee plantations for shade. The fleshy pods, about the size of a horse-chestnut, contain but a single seed. The floors of the caves of Aguas Buenas, Porto Rico, are in places covered with the seeds of this species, which are carried in by bats for the sake of the inclosing pulp. These seeds germinate in the caves, sending up slender white sprouts 2 or 3 feet high. The wood, which is said to be hard and durable, varies in the same tree from reddish yellow to black and takes a high polish. It is used for wheel hubs, for flooring and all sorts of carpenter work, and was formerly used in Brazil in the construction of boats. In Porto Rico its most common use is for the framework of houses. It is imported into Europe and used for turned parts of cabinetwork, and to make canes and parasol handles. (Adapted from *Cook and Collins, Mexican, Central American, and Porto Rican Plants*, p. 80.)

48510. PORTULACARIA AFRA Jacq. Portulacaceæ. Spekboom.

From Johannesburg, Transvaal. Cuttings collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received November 26, 1919.

"(No. 122. Pretoria, Transvaal. October 8, 1919.) Plant from the Botanic Grounds." (*Shantz.*)

A succulent South African shrub, rising to 12 feet, which affords locally the principal food for elephants; it is excellent for sheep pasture; hence, it may deserve naturalization on stony ridges and in sandy desert land not otherwise readily utilized. It is stated that all kinds of pasture animals eat it readily and, when grass is scarce, live on it almost entirely. It grows on hot rocky slopes and prefers doleritic soil. It is easily grown from cuttings and even from single leaves. *Spekboom* displays an extraordinary recuperative power when broken by browsing animals or when injured from other causes. The trunk may attain 1 foot in diameter. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 420.)

In some places the spekboom is arborescent, up to 20 feet high, often forming dense thickets. The juicy leaves are a wholesome food for all classes of stock as well as for wild animals, including buffaloes and elephants; hence, farms with plenty of spekboom need not fear an ordinary drought. "Providence meant to spoil our farmers in placing the spekboom on the hills of the karoo," wrote MacOwan in one of his articles on the fodder plants of the country. (Adapted from *Marloth, The Flora of South Africa*, vol. 1, p. 209.)

"The yearly rainfall of the region in which the spekboom thrives averages about 18 $\frac{3}{4}$ inches, and the rainiest months are the hottest ones (November, December, and January), the temperature reaching 108° F. During these months the rainfall is about 2 inches. In the winter months the rainfall is between 0.35 and 0.54 of an inch and the temperature sometimes as low as 21° F. The plant has been successfully introduced into America and small trees of it are now growing in San Diego and Santa Barbara, Calif." (*David Fairchild.*)

For previous introduction, see S. P. I. Nos. 9604 and 12020.

The spekboom is illustrated in Plate II.

48511 to 48515. *RIBES LOBBII* A. Gray. Grossulariaceæ.

Gooseberry.

From near Castlerock, Wash. Collected by Dr. David Fairchild. Received September 30, 1919, and October 6, 1919.

"Seeds of the largest wild gooseberries that I have ever seen. The fruits from which these seeds were taken I collected from a vigorous bush growing beside the road on a detour between Castlerock and Kelso, Wash., September 10, 1919. This particular bush appeared to bear unusually large fruits for a wild plant, some of them attaining a diameter of an inch. The fruits were attached to the bush by a very slender pedicel, and when I touched them they dropped into my hands. They were covered with flat-topped glandular hairs which made them slightly sticky to the touch and they had an odor reminding me of that exhaled by the leaves of *Rosa xanthina*. A farmer whom we met on the road declared that he could tell when he was near bushes of this species of gooseberry by the odor. The entire skin is claret red when the fruit is ripe, but as these were near the roadside they were grimy with dust which had stuck to their sticky glandular surfaces. The skin peels off easily, exposing a whitish tissue inside of which is the characteristic gooseberry flesh containing a few small seeds. The flavor is extremely mild, not sour but sweetish and rather lacking in character; capable of being improved possibly through breeding by the addition of that tartness so characteristic of our eastern wild gooseberry. I obtained as many seeds as possible with the idea that the seedlings from this particular specimen might inherit the unusual size and that it might be of value in breeding experiments." (*David Fairchild.*)

48511. No. 1. Wild gooseberry.

48512. No. 2. Wild gooseberry.

48513. No. 3. Wild gooseberry.

48514. No. 4. Seeds from the largest berry.

48515. Mixed seed of wild gooseberry.

48516 and 48517. *CRATAEGUS AZAROLUS* L. Malaceæ.

From Granada, Spain. Purchased from Mr. Pedro Giraud. Received November 29, 1919.

Among the species of *Crataegus* one of the most important is *C. azarolus* with its numerous varieties and races. This is a shrub of the calcareous hills and grows only on very dry lands. If undisturbed it grows as high as 13 to 16 feet, but its branches are generally hacked off for fuel by Arab women or mutilated by heavy stones thrown by the boys to shake down the fruit. Some varieties of *C. azarolus* have fruits as large as a large cherry, with a very agreeable acid taste. Although they are sold on the markets of the Orient, they would not be marketable in Europe or America because of the large stones;

but specimens are often found which are nearly stoneless, and it is possible that this character could be fixed by selection.

For fifteen years or more the writer has used *C. azarolus* as a stock for pears with excellent results. Top-grafted at 2 to 3 feet above the ground, it develops into a very beautiful, productive, and long-lived dwarf tree, provided the grafting is done with a very early variety. This shrub grows in extremely hot, dry places and must therefore complete the greater part of its development early in the season. Its roots, therefore, are unable to furnish the sap necessary to develop pears in August. If, however, it is grafted with a pear which fruits in May or June, when the roots of the *Crataegus* are in their period of greatest activity, the best results are obtained.

The writer speaks only of pears, because he has experimented with them, but he sees no reason a priori why these stocks should not do as well for apples, which he has not as yet tried. (Adapted from *Aaronsohn, Bureau of Plant Industry Bulletin No. 180, p. 15.*)

48516. "A red-fruited form." (*Giraud.*)

48517. "A yellow-fruited form." (*Giraud.*)

For previous introduction, see S. P. I. No. 33205.

48518 to 48550.

From Kenkelbosch, Cape Province. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received November 1, 1919. Quoted notes by Dr. Shantz.

48518. *ACACIA HORRIDA* (L.) Willd. Mimosaceæ. White thorn.

"(No. 75. Kenkelbosch, Cape Province. September 8, 1919.) A South African shrub, 4 to 10 feet high; it is very white when leafless because of the large spines. It grows mostly in the open, and seeds abundantly."

A natural hedge of this species is shown in Plate III.

48519. *ARCTOTIS ACAULIS* L. Asteraceæ.

"(No. 25. Kirstenbosch, Cape Province. August 25, 1919.) A beautiful composite, from 6 to 12 inches high, ranging from deep red to orange."

48520. *ASPARAGUS* sp. Convallariaceæ.

"(No. 79. Kenkelbosch, Cape Province. September 10, 1919.) A large spiny type from South Africa, with very pretty foliage; one of the *Wacht-een-beetje* [wait-a-bit thorns]; a very decorative vine with a red berry and black seed."

48521. *LEUCOSPERMUM*. Proteaceæ.

"(No. 76. Kenkelbosch, Cape Province. September 3, 1919.) A beautiful low bush from South Africa, with a very showy flower."

48522. *MEDICAGO HISPIDA DENTICULATA* (Willd.) Urban. Fabaceæ.

Medicago lupulina Bur clover.

"(No. 70. Port Elizabeth, Cape Province. September 2, 1919.) A low-growing clover, with heads of purple flowers. It is found on most lawns, producing a very dense cover. It is said to die out during hot weather but is excellent when the season is not too dry."

48523 to 48545. *PHASEOLUS* spp. Fabaceæ. Bean.

"(Nos. 44 to 69. Rosebank, Cape Town. August 27, 1919.) Beans from the Entomological Station at Rosebank, which have been grown for weevil resistance. All strains being grown for experimental purposes have been separated from the commercial varieties."

48518 to 48550—Continued.

48523. *PHASEOLUS AUREUS* Roxb.

Mung bean.

"(No. 44.) This is a small green bean of good flavor; when cracked in a coffee mill it makes good bean porridge. The seed resembles a small pea."

48524 to 48533. *PHASEOLUS COCCINEUS* L.

Scarlet Runner bean.

48524. "(No. 49.) Grown for weevil resistance by Mr. C. W. Mally, Cape entomologist."

48525. "(No. 60.) This number is splashed with light and dark brown markings."

48526. "(No. 61.) Reddish black markings on purplish ground."

48527. "(No. 62.) Large bean; black markings on purple ground."

48528. "(No. 63.) Similar to No. 62 [S. P. I. No. 48527], but smaller."

48529. "(No. 64.) See No. 60 [S. P. I. No. 48525]. Black splotches on purple ground."

48530. "(No. 65.) Dark variety of No. 64 [S. P. I. No. 48529]."

48531. "(No. 66.) Purple variety with black dots."

48532. "(No. 67.) A black variety."

48533. "(No. 68.) A white variety."

48534 and 48535. *PHASEOLUS LUNATUS* L.

Lima bean.

48534. "(No. 45.) *Governor* bean. A white bean with two small dark spots."

48535. "(No. 46.) Similar to No. 45 [S. P. I. No. 48534], but with a complete, dark-brown ring around the hilum."

48536 to 48545. *PHASEOLUS VULGARIS* L.

Common bean.

48536. "(No. 48.) A black bean a little larger than the navy bean."

48537. "(No. 50.) A tan-colored bean with a white eye surrounded by a brown ring. Said to be a popular bean in the back country."

48538. "(No. 53.) A dark bean, purplish to black."

48539. "(No. 54.) A purple variety of No. 53 [S. P. I. No. 48538]."

48540. "(No. 55.) A black variety of No. 53 [S. P. I. No. 48538]; bean still smaller than No. 54 [S. P. I. No. 48539]."

48541. "(No. 56.) A dark tan-colored bean, darker than No. 50 [S. P. I. No. 48537] and apparently an entirely distinct strain."

48542. "(No. 57.) A small white bean, like a navy bean."

48543. "(No. 58.) A black and white or black-eyed bean."

48544. "(No. 59.) A red and white bean with peculiar markings, similar, in general appearance, to No. 6 sent in from St. Vincent [S. P. I. No. 47979]."

48545. "(No. 69.) Similar to No. 50 [S. P. I. No. 48537], but lighter in color and larger."



A NATURAL HEDGE OF THE KAROO THORN IN SOUTH AFRICA. (*ACACIA HORRIDA* (L.) WILLD., S. P. I. No. 48518.)

Because of its shining white spines, the karoo thorn is fully as attractive when leafless as it is when clothed with its grayish green, finely divided foliage. When set closely together, the plants form an impenetrable hedge. They also serve in Africa as forage for sheep and cattle. Since the native home of the species is the desert region of Cape Province, it should be well adapted for culture in our Southwestern States. (Photographed by Dr. H. L. Shantz, Kenkelbosch, Cape Province, September 8, 1919; P36211FS.)



A NEW ORNAMENTAL FOR THE DRY SOUTHWEST. (*BURKEA AFRICANA* HOOK.,
S. P. I. No. 48804.)

Although it belongs to the Leguminosæ, this African tree is known as the Rhodesian ash. It bears yellow flowers and is a striking thing when in full bloom. Its seeds are said to be used as food in times of famine. The wood is tough and coarse grained. Since it comes from a dry, sandy region with rather cool winters, it should succeed in California and our South-western States. (Photographed by Dr. H. L. Shantz, Wonderboom, near Pretoria, Transvaal, October 12, 1919; P36434FS.)

48518 to 48550—Continued.

48546. *PROTEA LEPIDOCARPODENDRON* L. Proteaceæ.

"(No. 71. Port Elizabeth, Cape Province. September 2, 1919.) A large Protea bearing very large flowers; the handsome petallike bracts have black tips. It should be grown in California and possibly through the South. This is an important plant in the vegetation of hilly land."

For previous introduction, see S. P. I. No. 48184.

48547. *SCHOTIA SPECIOSA* Jacq. Cæsalpiniaceæ.

"(No. 77. Kenkelbosch, Cape Province. September 10, 1919.) *Boerboom*. A spiny tree, 6 to 20 feet high, used in tanning; produces scarlet flowers, followed by large pods, which are eaten when green by elephants and Boers. The tree is not grown in cultivation, but is an important element of the bush; the wood is hard."

48548 and 48549. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

48548. "(No. 51. Rosebank, Cape Town. August 27, 1919.) A small yellowish bean grown for weevil resistance."

48549. "(No. 52. Rosebank, Cape Town. August 27, 1919.) A yellowish bean similar to No. 51 [S. P. I. No. 48548]."

48550. *SOLANUM AURICULATUM* Ait. Solanaceæ.

"(No. 37. Mowbray, Cape Town. August 27, 1919.) A Solanum with small fruits and very large hairy mulleinlike leaves."

48551 to 48586.

From China and Japan. Collected by Mr. J. B. Norton, Agricultural Explorer of the Bureau of Plant Industry. Received November 29, 1919. Quoted notes by Mr. Norton.

48551. *ACTINIDIA* sp. Dilleniaceæ.

"(Seeds from Kuliang Hills, near Foochow, Fukien. September 8, 1919.) Collected by Mr. C. R. Kellogg from vines found by me. This vine is a wonderful grower after it gets started, and when clipped back sends out shoots 20 feet or more long before laterals are formed. The young woolly shoots are strikingly attractive. The fruit is not inedible if the woolly skin is removed. This species, like many other species not used by the natives at present, is found around deserted villages."

48552. *ARISAEMA* sp. Araceæ.

"(Kuliang Hills, near Foochow. August 6, 1919.) This is perhaps identical with the Japanese aroid used as a source of aeroplane varnish. The showy orange-red fruit stayed fresh from the time of collection until unpacked at the Plant Inspection Office, Washington, D. C., late in November."

48553. *BENINCASA HISPIDA* (Thunb.) Cogn. Cucurbitaceæ. **Wax gourd.**

"Collected near Foochow. This large gourd is common in summer and fall in the markets of Foochow. I did not test its edibility, but understand that it is very good."

48554. *CANARIUM ALBUM* (Lour.) DC. Balsameaceæ.

"(Foochow, China. September 14, 1919.) The fruit has a pleasant refreshing flavor to which it is easier to become accustomed than that of pickled olives. The Chinese are very fond of it and pay high prices

48551 to 48586—Continued.

for the fruits in the markets of Foochow and elsewhere. The fruit keeps well and when no longer fresh is dried or pickled. The tree grows well and reaches a height of 50 feet, with a broad spreading top. It is apparently very easy to graft, for it is top-worked by the Chinese in a very crude manner and apparently always successfully. The tree is also useful as a street or ornamental tree."

48555 and 48556. *CASTANEA CRENATA* Sieb. and Zucc. Fagaceæ.

Japanese chestnut.

48555. "(Kobe, Japan. October 28, 1919.) Samples of chestnuts being loaded for shipment to America."

48556. "(Foochow, China. September 15, 1919.) Samples from market."

48557. *CELOSIA ARGENTEA* L. Amaranthaceæ.

Cockscomb.

"(From Foochow, China. September 14, 1919.) Collected on waste land on Nantai Island near Foochow. This plant is common along the margins of gardens and fields and among the cemeteries on the hills. The silvery white spikes are very attractive."

48558. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"(Foochow, China. September 15, 1919.) Seeds of the common, small, red-fleshed melon of this region, which has very thin rinds and fine quality flesh but is lacking in sugar. It should be used in disease-resistant breeding to get shipping and marketing qualities for small melons. It has a very attractive appearance and the size suggests the possibility of producing a watermelon small enough to ship in crates for individual consumption."

48559. *CORCHORUS CAPSULARIS* L. Tiliaceæ.

Jute.

"(Foochow, China. September 14, 1919.) The common fiber plant of this region. The better farmers grow small patches of these plants for their own use."

48560 to 48562. *CUCURBITA PEPO* L. Cucurbitaceæ.

Gourd.

48560. "(Foochow, China. September 15, 1919.) An ornamental squashlike cucurbit used for room decoration by the Chinese."

48561. "(Foochow, China. September 17, 1919.) An ornamental squashlike cucurbit used for room decoration by the Chinese. The skin of this gourd is orange blotched with green."

48562. "(Gourds from Nagasaki, Japan. October 20, 1919.) An ornamental gourd used for room decoration by the Japanese. Bought in the market."

48563. *DIOSCOREA ALATA* L. Dioscoreaceæ.

Yam.

"Bulbils from a vine in the garden of a Chinese missionary teacher in Foochow, China. September 10, 1919."

48564. *DRYMOGLOSSUM* sp. Polypodiaceæ.

Fern.

"(From Nagasaki, Japan. A plant growing on volcanic cliffs near Mogi. October 14, 1919.) A very small creeping fleshy fronded fern for rockwork. This fern is found in the shaded ravines of Japan and China growing over the face of the rocks. It stands considerable drying out and makes a solid cover, suggesting some fleshy leaved flowering plant. It would be very good for use on rockwork in gardens in Florida and California."

48551 to 48586—Continued.

48565. *ELEOCHARIS TUBEROSA* (Roxb.) Schult. Cyperaceæ. Beechi.

"(Foochow, China. September 17, 1919.) Tubers of the beechi, or water chestnut, as it is sometimes called, from the market in Foochow. This plant is one of the very common food plants of this region. One sees the peeled and unpeeled tubers in all parts of Foochow. Apparently they are eaten by all classes. Venders sell them strung on split bamboo sticks, six tubers peeled and sometimes dipped in a dark-brown candy paste. The fields of this water chestnut were common both on the river level and on high ground. The grasshoppers eat the tops very badly, so that I saw no good seed."

48566. *EREMOCHLOA OPHIUROIDES* (Munro) Hack. Poaceæ. Grass.

"(Kuliang Hills, near Foochow, China. August 25, 1919.) Tops of the best lawn and grazing grass of this region. All through the clay region and the gravelly sand alluvial this is the dominant plant. All the neglected fields and washed hillsides are overgrown with it. It is depended upon in Kuliang and largely in Foochow as a source of cover for lawns. If the lawns are mowed, clipped, or grazed, this is the only grass which persists except Bermuda grass (*Capriola dactylon*), which sometimes maintains itself along the edges of walks and paths. This grass in pure culture does not need to be mowed, as it grows only 3 or 4 inches high. In rich soil it is dark green. It can be eradicated easily, as the runners are on the surface, and it is easily propagated by pieces of runners, turf, or seed. It is the best grazing grass in this region, growing with *Lespedeza striata* and allied forms over the fallow terrace lands. The prime condition of the cattle grazing in the hills here depends upon the prevalence of this grass and lespedeza. This is also an excellent plant to prevent washing; the long runners stretch out in every direction, root at every node, and soon branch and make cover. If it can be grown even as far north as North Carolina, it will solve the lawn difficulties of the Eastern States, where none of our grasses are satisfactory the year round."

48567. *FICUS* sp. Moraceæ.

"(Kuliang Hills, near Foochow, China. September 3, 1919.) Seed of the common banyan which finds its natural northern limit at Foochow. This tree is the best general-purpose shade tree commonly found at Foochow."

48568. *GINKGO BILOBA* L. Ginkgoaceæ. Ginkgo.

"(Shanghai, China. October 1, 1919.) Many tons of 'nuts' may be seen in the markets of Shanghai in September. Numerous grades are seen, based apparently on individual trees. The samples collected illustrate the range of variation."

48569. *APIOS FORTUNEI* Maxim. Fabaceæ.

"(Kuliang Hills, near Foochow, China. September 2, 1919.) This relative of *Apios tuberosa* and *A. priceana* is very important as a possible means of producing hybrids. It differs from both our American species, but may cross with one or both. It has a large fleshy root suggesting *A. priceana* in type. If, through it, the type of either one of our native plants can be broken up and a range of variation started to use in selection work, a new crop will be assured."

For previous introduction, see S. P. I. No. 44569.

48551 to 48586—Continued.

48570. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.
(*I. aquatica* Forsk.)

"(Foochow, China. September 10, 1919.) This plant is an important leaf vegetable or potherb. Several varieties are grown, but the common wide-leaved aquatic form grown in paddy and pond-edge culture is more abundant in markets. A dry-land form is found even on the hilltop up to 3,000 feet. Its growth is not nearly as tender as the aquatic form, but some say the two forms are different only in the cultural methods. In the flats on Nantai Island forms were found with narrow leaves. While they were cultivated in a half-hearted way, it seemed that these strains were little improved from the wild type, which, however, I did not see in this region, so that the plant is evidently not a native of Foochow. Some of the aquatic dry-land forms showed no bloom up to September, but the hill dry-land forms were in bloom in July and well seeded late in August. The quality of this plant is only mediocre, as the flavor has nothing distinctive about it. The upland forms are more or less fibrous, but the water-grown shoots of the flat plains are quite brittle. On early mornings in June and July one sees great loads of the shoots about 18 inches long in the market streets. The hollow stems, over half an inch in diameter, and the succulent leaves are cut up and cooked into a spinachlike table vegetable. The Chinese say that they carry the aquatic form through the winter without seed, renewing the field from cuttings in the spring. Both forms are attacked by white rust very badly. These seeds were obtained from a patch grown in very wet soil, but not under paddy conditions."

48571. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

"(Kobe, Japan. October 28, 1919.) Thin-shelled Persian walnuts from China procured here, where they were being transshipped. The shipment was apparently from ungrafted seedlings, but all the nuts were much thinner shelled than those from Japan and were as good as high-grade stock from California."

48572 and 48573. *KOCHIA SCOPARIA* (L.) Schrad. Chenopodiaceæ.

48572. "(Saigo, near Nagasaki, Japan. October 10, 1919.) A plant used for brooms all along the eastern coast of China and in Japan. The stems are very tough and durable. It is an ornamental border plant. This is not the same as the common *Kochia* of American seed catalogues. These plants are not highly colored in the fall and are fastigiate inverted pyramidal rather than ovoid. The branches and twigs are wonderfully tough and wear resistant. Every little garden has a few of these plants, first for ornamentals, then to pull for brooms to sweep the walks and yard."

48573. "(Foochow, China. September 14, 1919.) Another sample of the plant used for brooms by the Chinese and Japanese."

48574. *OSTERDAMIA JAPONICA* (Steud.) Hitchc. Poaceæ. Grass.
(*Zoysia japonica* Steud.)

"(Mogi, near Nagasaki, Japan.) Mixed seed of two forms of the common lawn grass of Japan. These seem distinct from the forms grown at Miami and Pasadena. If they are free-fruited strains they will prove an important addition to our grass importations, as *Osterdamia* when properly handled is one of the best lawn grasses for the South."

48551 to 48586—Continued.

48575. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava.

"Seeds from a very large guava in the market of Foochow, China. Large yellow or green guavas were very common. When stewed with red plums they make a very pleasant fruit dish."

48576. *PYRUS* sp. Malaceæ. Pear.

"(Kuliang Hills, near Foochow, China. August 30, 1919.) Seeds of a wild pear tree growing in a village on Kuliang. This seems to be the semiwild form of the cultivated pear of this region."

48577. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 16, 1919.) Seeds of an ovoid sand pear common on Foochow markets."

48578. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 16, 1919.) Seeds of a large round sand pear common in the markets at Foochow."

48579. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 16, 1919.) Seeds of a small round sand pear common in the markets at Foochow."

48580. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48581. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48582. *PYRUS* sp. Malaceæ. Pear.

"(Foochow, China. September 10, 1919.) Seeds collected in market by Chinese 'boy.'"

48583. *RHODOMYRTUS TOMENTOSA* (Ait.) Wight. Myrtaceæ.

"Growing among the azaleas on the Kuliang Hills, China, is this shrub with beautiful silvery-green leaves. Its flowers come in June and last until mid-July. While not so showy as an azalea it helps to make the bare grass-covered hills pleasant to the eye."

48584. *ROSA* sp. Rosaceæ. Rose.

"(Foochow, China. September 14, 1919.) Seeds of the common summer-blooming rose of Foochow fields. Very robust and hardy. This rose was in bloom in June on the hills and uncultivated areas on the island. It is a large white rose of strong growth and dark-green foliage. The bractlike involucre below the ovary is a striking characteristic. Found wherever the clay of granite origin is not covered by river alluvial silt. This rose thrives from sea level up to the top of Kushan (3,000 feet). Some plants were still flowering late in August, but most of the bushes or vines were set full of large red hips, often three-fourths of an inch or more in diameter. If the old flowers were picked off I think it would continue to bloom. All the other roses here are out of bloom before July. This rose varies from a small shrubby plant of pastures, scarcely 2 feet in spread, to bushes 6 feet high and with stems an inch through. In front of a bungalow at Kuliang was one that spread on the ground with runners 10 feet long. Now and then flowers are seen with more than five petals. This rose is used by the missionaries for table decoration."

48551 to 48586—Continued.

48585. *TRICHOSANTHES CUCUMEROIDES* (Ser.) Maxim. Cucurbitaceæ.

"(Foochow, China. Seeds from the garden of Mrs. T. N. Wilkinson. September 14, 1919.) This beautiful vine is grown in pots and trained on a frame about 2 feet high, the vine being wound in and out in a globe-shaped arrangement by the Chinese gardeners. In autumn, when the bright-red fruits hang among the dark-green lower leaves and the lacinate starlike flowers peep out among the upper leaves, this plant is very attractive. As a trellis vine it does not show so well, as it is not compact enough. The fruits are about 4 inches long and 1 inch through, shaped like an elongated lemon. When ripe they are a brilliant red."

48586. *TRICHOSANTHES* sp. Cucurbitaceæ.

"(Kuliang Hills, near Foochow, China. August 6, 1919.) A wild gourd found on the hills northwest of Kuliang, growing in grassland; about 3 inches in diameter, round, and yellow, and very full of seed; pulp bitter but attractive looking. Should be grown as a possible trellis ornamental."

48587 and 48588. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
(*Glycine hispida* Maxim.)

From Mirpurkhas, Sind, India. Presented by Mr. T. F. Main, Deputy Director of Agriculture. Received October 21, 1919.

"Two varieties of soy beans typical of the region around Sind. They have been under trial for the last five years on the Mirpurkhas Farm and give yields varying from 120 to 180 pounds per acre." (Main.)

48587. "Black soy beans."

48588. "White soy beans."

48589. *ALEURITES MONTANA* (Lour.) Wilson. Euphorbiaceæ.

Mu-oil tree.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received October 30, 1919.

"This tree is very scarce in Mauritius. It was introduced many years ago at the Royal Botanic Gardens of Pamplémousses, under the erroneous name of *Acer heterophylla*. The tree has been grown only for the pretty flowers and foliage. The blossoming generally precedes the coming out of leaves, but in 1911 the two appeared together." (Regnard.)

Aleurites montana yields an oil from the seeds practically identical with that from *A. fordii*, the tung-oil tree of China. While the seeds of the two species are almost indistinguishable, the fruits are easily recognized by their exteriors; those of the former are prominently ridged, while those of the latter are smooth.

48590 to 48594. *TRITICUM AESTIVUM* L. Poaceæ.

(*T. vulgare* Vill.)

Common wheat.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 3, 1919. Quoted notes by Dr. Trabut.

"These wheats are cultivated in an oasis by irrigation."

48590. No description was received with this material.

48591. "Wheat cultivated in Salla, Sahara."

48592. "*Ali Ben Makhoul* from Tuat, Sahara."

48593. "*Kernouf* from Tuat, Sahara."

48594. "Wheat from Gourara, Sahara."

48595. CASSIA TOMENTOSA L. f. Cæsalpiniaceæ.

From Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received November 5, 1919.

A tall shrub, tomentose or pubescent throughout, with oblong leaflets and terminal and axillary racemes of large deep-yellow flowers. (Adapted from *Grisebach, Flora of the British West Indian Islands, p. 207.*)

48596. ACHRAS ZAPOTA L. Sapotaceæ.**Sapodilla.**

From Panama, Republic of Panama. Presented by Mr. Ramon Arias-Feraud. Received November 5, 1919.

"The *sapodilla* or *chicozapote* is the best of the sapotaceous fruits. It is common in many parts of tropical America (growing wild in several regions) and is cultivated successfully in southern Florida, where it merits commercial exploitation. The fruits, which are picked when still hard, can be shipped to distant markets. Choice varieties should be propagated by budding." (*Wilson Popenoe.*)

48597 to 48608.

From Para, Brazil. Presented by Mr. André Goeldi. Received November 5, 1919. Quoted notes by Mr. Goeldi, except as otherwise stated.

48597. BRADBURYA PLUMIERI (Turp.) Kuntze. Fabaceæ.

(*Centrosema plumieri* Turp.)

A luxuriant ornamental vine known throughout the Parahyba Valley and also between Sao Paulo and Rio Janeiro, Brazil. It thrives in the dense shade, the vines climbing up to the tops of the trees at least 20 feet, until they find the sun. It bears large numbers of smooth pods about 8 inches long.

For previous introduction, see S. P. I. No. 32058.

48598 and 48599. BRADBURYA VIRGINIANA (L.) Kuntze. Fabaceæ.

(*Centrosema virginianum* Benth.)

48598. "Collected in September, 1919."

48599. "From Marajo Island."

48600. CANAVALI OBTUSIFOLIUM (Lam.) DC. Fabaceæ.

A creeping bushy herb, native to all the tropical regions, coriaceous-fleshy throughout even to the flowers, which are bright purple. The linear-oblong pods bear five to eight very hard, red-brown seeds, which are used as small change in Loanda, Angola. (Adapted from *Hiern, A Catalogue of Welwitsch's African Plants, pt. 1, p. 254.*)

For previous introduction, see S. P. I. No. 44753.

48601 and 48602. CASSIA sp. Cæsalpiniaceæ.

48601. "A fiber plant."

48602. "From Marajo Island."

48603. PHASEOLUS sp. Fabaceæ.

"Marajo Island. September, 1919."

48604. CLITORIA GLYCINOIDES DC. Fabaceæ.

"Collected in September, 1919."

48605. PAVONIA sp. Malvaceæ.

"A fiber plant."

48597 to 48608—Continued.

48606. TRIUMFETTA sp. Tiliaceæ.

"A fiber plant."

48607. VIGNA VEXILLATA (L.) Rich. Fabaceæ.

"Collected in September, 1919."

48608. WISSADULA SPICATA (H. B. K.) Presl. Malvaceæ.

An inferior forage, useful for cattle in times of emergency. (Adapted from *Correa, Flora do Brazil*, p. 137.)

48609 to 48611.

From Salisbury, Rhodesia. Roots presented by Mr. H. C. Mundy, agriculturist and botanist, Department of Agriculture. Received November 7, 1919.

"We have sent you two tins containing roots of cow cane, Indian cane, and m'fufu grass. As these plants are very hardy, I trust that the roots will retain their vitality. We have never obtained seeds of either cow cane or Indian cane, as the plants have not flowered with us." (*Mundy.*)

48609. PENNISETUM sp. Poaceæ.

M'fufu grass.

48610. SACCHARUM sp. Poaceæ.

Indian cane.

48611. SACCHARUM sp. Poaceæ.

Cow cane.

48612. CACARA EROSA (L.) Kuntze. Fabaceæ.
(*Pachyrhizus angulatus* Rich.)

Yam bean.

From Santiago de las Vegas, Cuba. Presented by Dr. Mario Calvino, director, Estacion Experimental Agronomica. Received November 8, 1919.

"Seeds of what we consider to be *Pachyrhizus tuberosus*. This plant bears blue flowers, although I have seen in Mexico one variety with white flowers." (*Calvino.*)

For previous introduction, see S. P. I. No. 47146.

48613. CASSIA AUSTRALIS Sims. Cæsalpiniaceæ.

From Cairo, Egypt. Presented by Mr. F. S. Walsingham, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received November 11, 1919.

An erect Australian shrub, simple or very little branched toward the top. The abruptly pinnate leaves are made up of 10 or 12 pairs of oblong-elliptical leaflets, and the axillary peduncles usually bear four large golden-yellow flowers. (Adapted from *Curtis's Botanical Magazine*, pl. 2676.)

48614 to 48623. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.
(*M. utilissima* Pohl.)

Cassava.

From St. Kitts, British West Indies. Cuttings presented by Mr. F. R. Shepherd, agricultural superintendent, Botanic Station, St. Kitts-Nevis. Received November 11, 1919.

"I am sending three sticks of each of the different varieties of cassavas." (*Shepherd.*)

48614. Bitter No. 1.

48619. Jackroe.

48615. Bitter No. 4.

48620. Small leaf.

48616. Blackolick.

48621. Sweet No. 1.

48617. Blue top.

48622. Red Greenaway.

48618. French No. 3.

48623. White Greenaway.

48624. PANDOREA RICASOLIANA (Tanf.) Baill. Bignoniaceæ.
(Podranea ricasoliana Sprague.)

From Nice, France. Presented by Dr. A. Robertson Proschowsky. Received November 10, 1919.

"Seeds of a most strikingly beautiful climber. It is evergreen, quick-growing, and produces its flowers during six or eight months—from spring to autumn, here—and perhaps would produce all through the year in a warmer climate. The flowers are large and of a beautiful pale-rose color; they are produced in large bunches, hundreds sometimes being open at the same time. I have had this species for more than 20 years, but this year is the first time it ever produced any seeds, four fruits having developed." (*Proschowsky.*)

For previous introduction, see S. P. I. No. 32969.

48625. TRIFOLIUM REPENS L. Fabaceæ. White clover.

From Groningen, Holland. Presented by Mr. C. Broekema, director, Groninger Zaaizaadvereeniging. Received November 11, 1919.

"*Friesland* white clover seed of the 1918 crop. It is unnecessary to state that the *Friesland* white clover is not a pure-bred strain, but what we call a 'land-race.'" (*Broekema.*)

48626. FERONIA LIMONIA (L.) Swingle. Rutaceæ. Wood-apple.
(F. elephantum Correa.)

From Peradeniya, Ceylon. Presented by Mr. H. F. Macmillan, superintendent, Botanic Gardens, Department of Agriculture. Received November 15, 1919.

"*Wood-apple*, or *elephant-apple*. A good-sized tree, 40 to 50 feet high, native to India and Ceylon. It bears round fruit, about the size of a large cricket ball, similar to the bel fruit, but distinguished from it by having a whitish, warty surface. The hard, woody shell incloses a soft, brownish, mealy substance which has a strong aromatic odor. The fruit is generally relished in Ceylon by the poorer classes and is also used in native medicine. Elephants, too, are fond of it. The tree is common throughout the dry region, being often cultivated there as well as in the moist low country." (*Macmillan.*)

48627 to 48630. BRASSICA spp. Brassicaceæ.

From Sibpur, near Calcutta, India. Presented by Mr. A. Gage, director, Botanical Survey of India. Received November 17, 1919. Quoted notes by Mr. Gage.

48627 and 48628. *BRASSICA CAMPESTRIS SARSON* Prain. **Sarson.**

48627. "Dark seeds mixed with *tori* from the Calcutta market."

48628. "Yellow seeds from the Calcutta market."

48629. *BRASSICA JUNCEA* (L.) Cass. **Chinese mustard.**

"*Lutni Rai*. Yellowish brown seeds from the Calcutta market."

48630. *BRASSICA NAPUS DICHOTOMA* (Roxb.) Prain. **Tori.**

"*Tori* from the Calcutta market."

48631 and 48632. BETA spp. Chenopodiaceæ.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received November 19, 1919. Quoted notes by Dr. Trabut.

48631 and 48632—Continued.**48631. BETA VULGARIS MACROCARPA (Guss.) Moq.**

"Very abundant on salty, clayey soil."

48632. BETA VULGARIS PERENNIS L."*Spinach-beet*. The leaves are used like spinach."**48633. ELAEIS GUINEENSIS Jacq. Phœnicaceæ. African oil palm.**

From Kamerun, West Africa. From Mr. Fred Hope, Ebolwoa. Received November 19, 1919.

Variety *poissonii*. The distinguishing character of this form is the presence around the fruit of a "collar" which consists of the persistent perianth having become more accrescent and more fleshy than usual. Very little notice appears to have been taken previously of the perianth at the time when the fruit was mature, probably owing to its having been removed before the fruit was brought into the market. The fruit is obovoid or subglobose, about 3 cm. long (not including the beak, which is 1 cm. long), and somewhat constricted at the base, not ventricose as in some varieties. The woody endocarp is about 3 mm. thick. The 6-parted perianth is thick and fleshy and almost incloses the fruit. Its segments have a transverse thickening about 5 mm. from their apices. According to an analysis made at the Imperial Institute it contains "69.9 per cent of oil, equivalent to 14.8 per cent calculated on the whole fruit or 78.2 per cent calculated on the dry pulpy covering." The ordinary pulp adhering to the nuts of this form yields 27.2 per cent of oil. (Adapted from *Kew Bulletin of Miscellaneous Information*, p. 93.)

48634 to 48636. LOTUS spp. Fabaceæ.

From Weraroa, New Zealand. Presented by Mr. E. Bruce Levy, biologist, Central Development Farm. Received November 24 and 25, 1919. Quoted notes by Mr. Levy.

48634. LOTUS CORNICULATUS L.

"Bird's-foot trefoil."

An excellent fodder, considered a valuable ingredient in meadows and pastures. Native to Tasmania, Victoria, New South Wales, and South Australia. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 134.)

For previous introduction, see S. P. I. No. 18371.

48635. LOTUS ULIGINOSUS Schkuhr.

"Greater bird's-foot trefoil."

A pasture plant of agricultural importance, fairly largely used in New Zealand, from 10 to 15 tons of seed being sown annually. This plant prefers a wet or swampy habitat. The seed sold in December, 1918, at about a dollar per pound. It is saved for seed mainly in the Auckland Province, but prior to the war the greater portion was imported, mainly from Germany. This seed was exported from the latter country under the name of *Lotus villosus* or *L. uliginosus*, which names are the European trade names for the *L. major* of the New Zealand seed trade. *Lotus major* is very variable with regard to certain characters, such as hairiness, and in consequence several botanical names have been given to the plant. There are apparently a good many different strains, but whether these breed true from seed and are good agricultural species or whether

48634 to 48636—Continued.

they are due either to the habitat in which they are growing or to fertilization has not yet been ascertained. (Adapted from *The New Zealand Journal of Agriculture*, vol. 17, p. 347.)

For previous introduction, see S. P. I. No. 5942.

Received as *L. major*, which is now considered to be a synonym of *L. uliginosus*.

48636. LOTUS sp.

"Hairy bird's-foot trefoil."

Received as *L. hispidus*, but the sample does not agree with our material of that species.

48637 to 48654.

From Persia. Presented by Mr. Edward C. M. Richards, forester, New York City. Received November 25, 1919. Quoted notes by Mr. Richards.

"Perhaps you will recall that late in May, 1917, when I was starting for western Persia to do relief work, you asked me to do what I could toward securing Persian seeds of various kinds for you. I returned to New York this last July bringing with me a variety of vegetable and grain seeds. These seeds were collected for me by various Persians, and I trust that you will find them of use to you."

48637. CAPSICUM ANNUUM L. Solanaceæ.

Red pepper.

"Hot red pepper."

48638. CUCUMIS MELO L. Cucurbitaceæ.

Muskmelon.

48639. FICUS CARICA L. Moraceæ.

Fig.

"Kurdistan fig."

48640 and 48641. HORDEUM DISTICHON PALMELLA Harlan. Poaceæ.

Barley.

48640. "Yellow barley."

48641. "Ordinary form."

48642. JUGLANS REGIA L. Juglandaceæ.

Walnut.

48643 and 48644. ORYZA SATIVA L. Poaceæ.

Rice.

48643. "Ardibil."

48644. "Sadry."

48645. RAPHANUS SATIVUS L. Brassicaceæ.

Radish.

48646 to 48651. TRITICUM AESTIVUM L. Poaceæ.

Common wheat.

48646. "Hamisee bahar. One of the best wheats of Persia. Can be used as either fall or spring wheat."

48647. "Fall wheat."

48650. "No. 2."

48648. "Perfumé, spring wheat."

48651. "No. 3."

48649. "No. 1."

48652 and 48653. VITIS VINIFERA L. Vitaceæ.

Grape.

48652. "Zenjon."

48653. "Black Kurdistan."

48654. ZEA MAYS L. Poaceæ.

Corn.

48655. RODGERSIA PINNATA Franch. Saxifragaceæ.

From Ness, Neston, England. Seeds presented by Mr. A. K. Bulley. Received November 28, 1919.

"One of the finest of wild plants, which is apparently beginning to break under garden culture. Seedlings are varying greatly in color. There are some very fine reds. The seed generally germinates easily and the plant, espe-

cially in the deep red forms, is certainly one of the very finest of herbaceous perennials." (*Bulley.*)

48656. *RANDIA* sp. *Rubiaceæ*.

From Concepcion, Paraguay. Presented by Mr. R. Gwynn. Received November 29, 1919.

"A very ornamental bush, 12 to 15 feet high, growing on the bank of a stream about 7 miles from Rio Paraguay in the Chaco region. It is very handsome." (*Gwynn.*)

48657 to 48688.

From Montevideo, Uruguay. Presented by Sr. Luis Guillot, Direccion General de Paseos Publicos. Received October 17, 1919.

48657. *ARISTOLOCHIA FIMBRIATA* Cham. *Aristolochiaceæ*. (*A. ciliata* Hook.)

Fringed-flowered *Aristolochia*. A native of Buenos Aires, with a weak, slender stem, not climbing; the leaves are cordate-reniform and very obtuse. The tube of the perianth is green, much curved, like a hunting horn, swollen at the base, expanding above into a large 1-sided limb which is greenish brown outside and deep purple-brown inside, with yellow reticulations; the margin is beset with long, succulent hairs, each tipped with a gland. The very singular structure and color of the long-fringed flowers render this species particularly worthy of cultivation under glass or in favorable situations in the open. (Adapted from *Curtis's Botanical Magazine*, pl. 3756.)

48658. *BACCHARIS CORDIFOLIA* DC. *Asteraceæ*.

Mio-mio. This shrubby, much-branched plant is well known by farmers and herders to be a violent poison to herbivorous animals. Doubtless the danger is great enough for it to be recognized as poisonous by the animals, as thickets of the *mio-mio* in the pastures remain undisturbed. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 3, p. 234.)

48659. *BACCHARIS GENISTELLOIDES* (Lam.) Pers. *Asteraceæ*.

Carqueja. This erect, somewhat shrubby plant is found in grassy fields everywhere in Uruguay, Colombia, Ecuador, Peru, Argentina, and Paraguay. In Brazil it is used medicinally. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 3, p. 224.)

48660. *BLEPHAROCALYX LANCEOLATUS* Berg. *Myrtaceæ*.

Multa. A very abundant, tall, slender tree with fragrant leaves; the small yellow fruits are not edible. The wood of this tree is soft and nearly white. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 67.)

48661. *CARICA QUERCIFOLIA* (St. Hil.) Benth. and Hook. *Papayaceæ*.

"The fruit from this species is said to contain more papain than that of any other. The tree is very hardy, is uninjured by light frosts, and should prove of value for breeding purposes." (*David Fairchild.*)

For previous introduction, see S. P. I. No. 41298.

48662. *CELTIS AUSTRALIS* L. *Ulmaceæ*.

Nettle tree.

The nettle tree is one of the best trees for replanting forests because of its rapid growth, even in poor and rocky soils. The value of its products (wood, leaves, and fruits) soon compensates for the expense incurred in planting and cultivating it.

48657 to 48688—Continued.

In the temperate zone, to which it is best suited, the nettle tree does well in any exposure and in any soil. Its different ways of propagation allow the grower to choose the method of planting which is best adapted to the local conditions and to the soil. The tree does well in soils where other trees grow only with difficulty and helps to cover rocky and arid ground. When grown on the pollarding system or in groups of coppice shoots, it supplies material for the manufacture of many agricultural implements. Each part of the tree is of value and supplies useful material; thus, the wood, by reason of its hardness, fine grain, delicate color, elasticity, and resistance, is excellent for turning or cabinetmaking; the leaves are valuable as fodder for animals, especially in seasons and districts in which there is a shortage of green fodder; cattle and goats willingly eat the young leaves which, when fresh, contain 6.30 per cent of nitrogenous substances, 0.15 per cent of fat, and 19.69 per cent of carbohydrates. Nearly every year the nettle tree gives an abundant crop of stone fruit very rich in sugar (39.40 per cent when completely ripe), which makes a very useful feedstuff for live stock, especially in districts where it is not possible to include sugar in the rations. The kernel contains 67.10 per cent of fat, that is to say, 7.02 per cent of that of the whole fruit. When ground the stones yield about 10 per cent of fat, but, if the kernels are separated from the woody part, this may amount to 60 per cent. In this case cakes containing about 12 per cent of protein, 12.4 per cent of fat, and 48.5 per cent of nitrogen-free extract are obtained. The oil extracted may be used for various purposes.

The nettle tree should be preferred to all other trees for replanting woods, and offers means of rapidly covering bare ground with plant growth. The speedy and large remuneration promised by its products may serve as an attraction to private landowners who wish to help in the regeneration of Italian forests. (Adapted from *Annali della Regia Scuola Superiore di Agricoltura in Portici*, 2d ser., vol. 13, p. 1.)

48663. *CELTIS TALA* Gillies. Ulmaceæ.

Tala. On the coast of the Atlantic and in the district of Tuyu immense thickets of *tala* exist. It is a tree with a short, stout, branched trunk. The wood is yellowish white and smooth; it is used for posts and firewood. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 102.)

For previous introduction, see S. P. I. No. 42285.

48664. *CISSUS SICYOIDES* L. Vitaceæ.

(*Vitis sicyoides* Miquel.)

The leaves of this vine are cooked with taros and castor oil and used as a poultice for abscesses. (Adapted from *Sack, Plantaardige Voortbrengselen van Suriname*, p. 42.)

48665. *CISTUS CANDIDISSIMUS* Dun. Cistaceæ.

A beautiful rapid-growing evergreen shrub, with silvery-white leaves and short-lived, pale rose-colored flowers, from the Canary Islands. It is an ideal rockery plant. (Adapted from *Flora and Sylva*, vol. 2, p. 44.)

48666. *CISTUS LADANIFERUS* L. Cistaceæ.

The gum cistus is the finest of the genus and one of the best and hardest of small shrubs. It is a handsome, bushy evergreen, from 4 to

48657 to 48688—Continued.

8 feet in height, with scented foliage. The stem and the large, deep-green leaves, silvery white below, are clammy pubescent. The numerous, large, showy white flowers have a bold crimson blotch at the base of each petal. In parts of the East the gum is gathered from this plant by beating the branches with a sort of flail, the thick gummy juice being scraped off and made into a fragrant resin. (Adapted from *Flora and Sylva*, vol. 2, p. 44, and *Gardening Illustrated*, vol. 22, p. 212.)

48667. *DODONAEA VISCOSA* (L.) Jacq. Sapindaceæ.

Chirca de monte. A tree, 3 to 5 meters high, with erect branches and dark wrinkled bark. The leaves are of varying shapes, oblong to lanceolate; the greenish white flowers are very small; and the fruit is a deep red capsule. It is frequent in stony places along the coast and is also found in the interior. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 1, p. 290.)

For previous introduction, see S. P. I. No. 45726.

48668. *DOLICHOS JACQUINII* DC. Fabaceæ.

(*D. lignosus* Jacq. not L.)

A perennial twining plant, pilose throughout, with ovate-acute scabrous leaves about 2 inches long; the umbels of white flowers are followed by straight, terete legumes, 3 to 4 inches long, covered with yellow hairs and snow-white inside. The small, reniform, shining black seeds, 8 to 10 to a pod, have a white hilum. Native to Caribbean forests. (Adapted from *Jacquin, Selectarum Stirpium Americanarum Historia*, p. 205.)

For previous introduction, see S. P. I. No. 27534.

For discussions of the status of *Dolichos lignosus* and of *D. jacquinii*, the following publications should be consulted: Piper, C. V., and Morse, W. J., "The Bonavist, Lablab, or Hyacinth Bean," U. S. Department of Agriculture Bulletin No. 318, 1915; Freeman, G. F., "The Purple Hyacinth Bean," *Botanical Gazette*, vol. 66, pp. 512 ff. 1918.

48669. *DURANTA LORENTZII* Griseb. Verbenaceæ.

"A shrub, 3 or 4 meters high, with lilac flowers and drupaceous succulent fruits." (*Guillot*.)

48670. *EUGENIA AUSTRALIS* Wendl. Myrtaceæ.

(*E. myrtifolia* Sims.)

A handsome evergreen shrub from East Australia, with graceful, slightly winged branches and smooth, shining, elliptic leaves. The dainty white flowers have persistent calyxes with spreading red sepals, small petals, and very many, extremely long, large-anthered stamens. The leaves and flowers have a pleasant aromatic taste. The palatable fruit is utilized particularly for jam, but the seed must be removed from the pulp. (Adapted from *Curtis's Botanical Magazine*, pl. 2230, and *Mueller, Select Extra-Tropical Plants*, p. 212.)

48671. *EUGENIA GUABIJU* Berg. Myrtaceæ.

Pitanga. This slender ornamental tree is found on the banks of streams. The immature fruit is red, turning black when mature; it is smaller than that of *Ñangapirĩ* (*Eugenia uniflora*),* and is not edible. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina*, p. 69.)

For previous introduction, see S. P. I. No. 3208.

48657 to 48688—Continued.

48672. *FICUS SUBTRIPLINERVIA* Mart. Moraceæ.

A Brazilian forest tree with a dense crown of obtuse papery leaves, prominently 3-veined at the base. The small axillary fruits are globular. (Adapted from *Martius, Flora Brasiliensis, vol. 4, pt. 1, p. 99.*)

48673. *GLEDITSIA AMORPHOIDES* (Griseb.) Taub. Cæsalpiniaceæ.

A spiny Bolivian tree, flowering in December; it sometimes attains a height of 50 feet and the trunk diameter is often $2\frac{1}{2}$ feet. Hieronymus states, according to Taubert, that the bark is used in place of soap for removing spots from woollen and cotton goods; hence the name "quillay." The leaves, young twigs, and roots have astringent properties. The wood is used in making vessels for holding liquids, in turning, house furniture, and for wooden soles and pegs. (Adapted from *Taubert, Berichte Deutsche Botanische Gesellschaft, vol. 10, p. 637.*)

For previous introduction, see S. P. I. No. 42327.

48674. *HEIMIA MYRTIFOLIA* Cham. and Schlecht. Lythraceæ.
(*Nesaea myrtifolia* Desf.)

A small, densely leafy ornamental shrub with deep yellow flowers; native to Brazil. (Adapted from *St. Hilaire, Flora Brasiliæ Meridionalis, vol. 3, p. 138.*)

For previous introduction, see S. P. I. No. 36025.

48675. *HELIANTHEMUM CHAMAECISTUS* Mill. Cistaceæ.
(*Cistus lusitanicus* Mill.)

This beautiful evergreen shrub grows quickly into a shapely bush bearing multitudes of large white flowers with crimson spots at the bases of the petals. The narrow, bright-green leaves are slightly viscous. It flowers abundantly during the summer, is drought resistant, and if planted in a border extends itself 2 or 3 feet over. The original species is a native of Britain; it is readily propagated by cuttings and will grow in any moderately light soil. Bees are exceedingly fond of the *rock rose*, as this genus is called; and during dry seasons, when many other flowers fail, it is much frequented by bees; this probably accounts for the many natural hybrids known to botanists. (Adapted from *Flora and Sylva, vol. 2, p. 44; Gardening Illustrated, vol. 22, p. 212; and Loddiges, Botanical Cabinet, vol. 3, p. 202.*)

48676. *HOMERIA COLLINA* (Thunb.) Vent. Iridaceæ.
(*Moraea collina* Thunb.)

A perennial plant, native to the Cape of Good Hope, with a globose corm covered with fibrous coats, and usually one convolute-concave narrow leaf, much longer than the stem. The erect stem bears one or more clusters of handsome red-orange flowers grouped in twos or threes. (Adapted from *Curtis's Botanical Magazine, pl. 1033.*)

48677. *JODINA RHOMBIFOLIA* Hook. and Arn. Santalaceæ.

Quebrachillo. Generally a low, bushy, slender tree with 3-pointed spiny leaves. The wood is white and smooth; the bark is thick. It is native to Brazil. (Adapted from *Venturi and Lillo, Contribucion al Conocimiento de los Arboles de la Argentina, p. 92.*)

For previous introduction, see S. P. I. No. 33974.

48657 to 48688—Continued.

48678. MANIHOT TWEEDIEANA Muell. Arg. Euphorbiaceæ.

A wild Brazilian species from which the Indians are said to obtain edible varieties by cultivating the plants for a few years.

For previous introduction, see S. P. I. No. 47971.

48679. MIMOSA RAMULOSA Benth. Mimosaceæ.

A small, much-branched shrub from Brazil, up to 5 feet high, with spiny stems, petioles, and peduncles. The solitary flower heads, which appear in the spring, are covered with inverted prickles. The nearly cylindrical pods are clothed with stout spines. It is quite similar to *Mimosa ciliata*, from which it is distinguished principally by its unjointed pods and its 3-nerved leaflets. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 427.*)

48680. MIMOSA URUGUENSIS Hook. and Arn. Mimosaceæ.

A small, branched shrub found along the banks of the Rio Uruguay, 2 to 3 meters high, with a few stout, strong, straight spines. The small cylindrical shoots are lustrous and smooth. The calyx is very short, the corolla 3 to 4 mm. and glabrous; the pod is 2 to 2.5 cm. long and 4 to 6 mm. broad. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 431.*)

48681. MYRRHINIUM RUBRIFLORUM (Camb.) Berg. Myrtaceæ.

A forest tree from Brazil, with the young branches compressed and the puberulent leathery leaves soon becoming glabrous. The purplish flowers are in axillary cymes. (Adapted from *Martius, Flora Brasiliensis, vol. 14, pt. 1, p. 466.*)

48682. OCOTEA ARECHAVALETAE Mez. Lauraceæ.

"A tree, 10 to 12 meters high, with oval, entire, coriaceous leaves, shining green on top and pale green on the under side. The dark-yellow flowers are followed by dark-brown drupaceous fruits." (*Guillot.*)

48683. PASSIFLORA ADENOPODA Moc. and Sesse. Passifloraceæ.

A Mexican ornamental woody climber having cordate leaves with five ovate-acute lobes. The petioles are glandular and the bracts serrate incised. The fruits are inedible. (Adapted from *De Candolle's Prodrornus, vol. 3, p. 330.*)

48684. POMADERIS APETALA Labill. Rhamnaceæ.

A tree occasionally attaining a height of 60 feet, but usually smaller; native to southeastern Australia. The foliage is eaten readily by stock, often in preference to their customary feed. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 416.*)

48685. PROSOPIS NANDUBEY Lorentz. Mimosaceæ.

A glabrous tree of medium size, frequent in the mountains of Uruguay. The numerous small flowers appear in spring. The pods are falcate or semicircular, with a pulp of acid flavor. The wood is used industrially because of its lasting qualities. (Adapted from *Arechavaleta, Flora Uruguay, vol. 1, p. 419.*)

48686. QUILLAJA BRASILIENSIS (St. Hil. and Tul.) Mart. Rosaceæ.

Quillay, or *jabon de palo*. A Brazilian tree, 6 to 8 meters high, with an erect trunk and an open crown. The alternate leaves are oblong-lanceolate and the white flowers are in distinct corymbs. The regular

48657 to 48688—Continued.

shape and very leafy crown of the tree make it a striking ornamental, especially when it is in flower. The bark and the wood cut into chips form articles of commerce from which are extracted certain constituents which are used in the saponification of greasy substances. (Adapted from *Arechavaleta, Flora Uruguaya, vol. 1, p. 451.*)

48687. *SCHINUS LENTISCIFOLIUS* March. *Anacardiaceæ*.

A small Brazilian tree, 50 to 100 cm. high, with crooked branches and dark ashy bark. The compound leaves are composed of 4 to 6 pairs of pinnæ with winged petioles. The whitish flowers in numerous axillary panicles appear in spring. (Adapted from *Arechavaleta, Flora Uruguaya, vol. 1, p. 297.*)

48688. *SYMPHYOPAPPUS* sp. *Asteraceæ*.

An ornamental composite received as *Eupatorium montevidense*, but identified by Dr. Blake as a species of *Symphyopappus*.

48689 to 48750.

From China and Japan. Collected by Mr. J. B. Norton, Agricultural Explorer of the Bureau of Plant Industry. Received November 26 and December 1, 1919. Quoted notes by Mr. Norton.

48689. *ALLIUM* sp. *Liliaceæ*.

"(No. 18. Nagasaki, Japan. October 12, 1919.) A clustered garlic commonly grown around Nagasaki; also found wild, probably as an escape."

48690. *AMARANTHUS GANGETICUS MELANCHOLICUS* (L.) Voss. *Amaranthaceæ*. *Joseph's-coat*.

"(Nagasaki, Japan. October 21, 1919.) Closely related to *Amaranthus retroflexus*, with showy red, yellow, white, and green leaves; common in flower beds. This old foliage plant deserves attention from plant breeders, and if properly selected should produce a highly ornamental foliage plant for bedding purposes."

48691 to 48695. *AMYGDALUS PERSICA* L. *Amygdalaceæ*. *Peach*
(*Prunus persica* Stokes.)

48691. "(No. 3a. Foochow, Fukien, China. July 10, 1919.) The Pang San, or 'white peach,' from the market. Grown near Foochow, maturing in July and August."

48692. "(No. 4a. Foochow, Fukien, China. July 10, 1919.) The 'big red peach' (Chinese name translated) from the market. Grown near Foochow; matures from June to the middle of July."

48693. "(No. 4b. Foochow, Fukien, China. July 10, 1919.) The 'small red peach' (Chinese name translated) from the markets. Grown near Foochow; matures from June to the middle of July."

48694. "(No. 3b. Foochow, Fukien, China. July 10, 1919.) The 'Ngie,' a white peach obtained in the markets. Matures in July and August."

48695. "(No. 5. Foochow, Fukien, China. July 10, 1919.) Obtained from the market. A peach with dark-red flesh. While lacking in flavor when raw, this peach has a most excellent flavor when stewed with sugar. The juice becomes the color of dark Burgundy; this might be wonderful as a coloring for soft drinks."

48689 to 48750—Continued.

48696. *ARDISIA JAPONICA* (Thunb.) Blume. Myrsinaceæ.

"(Kobe, Japan. October 26, 1919.) A low, red-berried shrub growing in the woods above Kobe. This plant would probably make a very good Christmas green, as the berries probably remain fresh through the early winter."

48697. *ASPARAGUS LUCIDUS* Lindl. Convallariaceæ.

Asparagus.

"(Kuliang Hills, near Foochow, Fukien, China. August 10, 1919.) A climbing vine of great beauty, growing commonly on the moist wooded slopes of ravines. Its graceful foliage and habit make it very attractive. The fleshy roots are said to be used by the Chinese for conserves."

48698. *AVERRHOA CARAMBOLA* L. Oxalidaceæ.

Carambola.

"(Foochow, Fukien, China. September 17, 1919.) From the market. A characteristic fruit of Foochow at this season. The Chinese name means 'foreign peach,' indicating a recent introduction into this region. It does not seem to be eaten freely by the Chinese, perhaps because of its acid flavor, but it is found in all the better fruit markets."

48699. *BENZOIN CITRIODORUM* Sieb. and Zucc. Lauraceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) A shrub or small tree with a lemon-verbena odor in the leaves and fruit. It is ornamental in appearance with its graceful habit and leaves. It is heavily loaded with oily berries; possibly this tree will yield a commercial oil more cheaply than lemon grass (*Cymbopogon citratus*)."

48700. *CANNA* sp. Cannaceæ.

Canna.

"(Foochow, Fukien, China. September 15, 1919.) Growing in ditches in cultivated land; not used by the Chinese."

48701. *CELOSIA CRISTATA* L. Amaranthaceæ.

Cockscomb.

"(Foochow, Fukien, China. September 15, 1919.) A very fine variegated yellow and red cockscomb, grown in pots on the front steps of the Y. M. C. A. building. The plants are cut back and made to branch so that one plant has many heads, which vary in color from red to light yellow."

48702. *CEPHALANTHERA* sp. Orchidaceæ.

Orchid.

"(No. 16. Nagasaki, Japan. October 20, 1919.) From the grounds of the American consulate. An ornamental orchid growing in soil in large clumps like an iris. The flowers are said to be very beautiful."

48703. *COIX LACRYMA-JOBI* L. Poaceæ.

Job's-tears.

"(Foochow, Fukien, China. September 15, 1919.) Seed from a plant growing as an escape along a ditch in the garden section of Nantai Island."

48704. *DIANTHUS CHINENSIS* L. Silenaceæ.

"(Mogi, near Nagasaki, Japan. October 14, 1919.) A cultivated single garden pink; no double varieties in this vicinity. Introduced for genetic work on inheritance of doubling."

48705. *DIOSCOREA* sp. Dioscoreaceæ.

Yam.

"(No. 13. Nagasaki, Japan. October 14, 1919.) For experimental use."

48689 to 48750—Continued.

48706. *DIOSCOREA* sp. Dioscoreaceæ. Yam.

"(No. 14. Nagasaki, Japan. October 14, 1919.) For experimental use."

48707. *DURANTA REPENS* L. Verbenaceæ.

"(Foochow, Fukien, China. September 15, 1919.) *Duranta repens* is probably the most common flowering shrub around Foochow. It is not only planted as a hedge in many native and foreign gardens, but grows as an escape everywhere. Its nodding racemes of blue flowers and persistent golden yellow berries which cover the unpruned plants give a very pleasing appearance to the dusty roadsides. As a close-pruned hedge *Duranta* is quite satisfactory to many foreign residents, as it stays green better than many other plants and quickly fills up gaps caused by neglect or typhoons."

48708. *EURYA JAPONICA NITIDA* (Korth.) Dyer. Theaceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) 'Inkberry,' a small evergreen with black berries growing commonly over the dry hills near Foochow. Of value as a hedge border in the Southern States."

48709. *EUSCAPHIS JAPONICA* (Thunb.) Dipp. Staphyleaceæ.
(*E. staphyleoides* Sieb. and Zucc.)

"(No. 12. Saigo, near Nagasaki, Japan. October 10, 1919.) Shrub with bright crimson-purple fruits opening like *Euonymus*."

48710. *FICUS BEECHEYANA* Hook. and Arn. Moraceæ. Fig.

"(Kuliang Hills, near Foochow, Fukien, China. August 10, 1919.) A wild fig with very strong bast fiber."

48711. *HOMIOCELTIS ASPERA* (Thunb.) Blume. Ulmaceæ.
(*Aphananthe aspera* Planch.)

"(No. 7. Nagasaki, Japan. October 22, 1919.) From the grounds of the American consulate. Seed from a Celtislike tree about 40 feet high; very ornamental. The foliage is not dense, and the tree has a light, feathery appearance."

48712. *HUMULUS JAPONICUS* Sieb. and Zucc. Moraceæ.

"(Foochow, Fukien, China. September 10, 1919.) Wild hops growing along a road; much liked by bees."

48713. *IPOMOEA REPTANS* (L.) Poir. Convolvulaceæ.
(*I. aquatica* Forsk.)

"(Foochow, Fukien, China. September 15, 1919.) Plant used for greens."

48714 and 48715. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ. Gourd.

"(Saigo, near Nagasaki, Japan. October 10, 1919.) Seeds of rather high-grade dipper gourds grown at a large orange plantation near Saigo."

48714. "(No. 19.) White-seeded form."

48715. "(No. 21.) Blue-seeded form."

48716. *LILIUM BROWNII* Poit. Liliaceæ. Lily.

"(Kuliang Hills, near Foochow, Fukien, China. August 25, 1919.) The lily that makes Kuliang beautiful in June and July. The solitary trumpets of this large lily stand out in bold relief against the barren hillsides. The buds and young flowers are light yellow, but the full

48689 to 48750—Continued.

open flower gradually turns to a clear white with purple or brownish stripes on the outer petals. The bulbs are said to be eaten by the Chinese."

48717. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

"(No. 20. Saigo, near Nagasaki, Japan. October 10, 1919.) A high-grade form of this gourd selected from ripe gourds on the largest orange plantation at Saigo."

48718. MELASTOMA REPENS Desr. Melastomaceæ.

"(Kuliang Hills, near Foochow, Fukien, China. August 20, 1919.) A low perennial shrub which bears beautiful roselike flowers all summer long. The flowers last only one day, but because of their great number the shrub is always well covered. The fruits are said to be eaten, but have the lack of flavor so common in Chinese fruits."

48719. MISCANTHUS SINENSIS Anders. Poaceæ. Grass.

"(Kuliang Hills, near Foochow, Fukien, China. August 1, 1919.) Seeds of 'tiger grass,' the saw-edged grass which is said to kill sheep. The fruiting panicles are used to make the standard brooms of this region. In many respects these brooms are better than those made from broom corn."

48720. OPHIOPOGON JAPONICUS (L. f.) Ker. Liliaceæ.

"(No. 2. Mogi, near Nagasaki, Japan. October 12, 1919.) This interesting grasslike plant is adapted to stand long drought and is one of the best shade-resisting plants known that could be used for lawn purposes."

48721 and 48722. OSTERDAMIA JAPONICA (Steud.) Hitchc. Poaceæ.
(*Zoysia japonica* Steud.) **Grass.**

"(Mogi, near Nagasaki, Japan. October 12, 1919.) Rhizomes from the same lawn from which seed was obtained in June."

48721. "(No. 3.)"

48722. "(No. 4.)"

48723. PAEDERIA sp. Rubiaceæ.

"(No. 17. Saigo, near Nagasaki, Japan. October 10, 1919.) Seed of a semiherbaceous vine found along the coast from Foochow northward. A good climber, with large clusters of beautiful white and maroon, or dark purple, flowers. Good for covering fences, walls, etc."

48724. PANICUM MILIACEUM L. Poaceæ. Proso.

"(Nagasaki, Japan. October 14, 1919.) Apparently escaped from cultivation."

48725. PHAENOSPERMA GLOBOSA Munro. Poaceæ. Grass.

"(Kuliang Hills, near Foochow, Fukien, China. August 12, 1919.) A tall, large-seeded grass, apparently perennial, growing in a deep ravine. The size of the seeds suggests possibilities of improvement for feed for fowls or stock."

48726. PITTOSPORUM GLABRATUM Lindl. Pittosporaceæ.

"(Shanghai, China. October 1, 1919.) From a hedge in the foreign cemetery, Bubbling Wells Road. The evergreen foliage contrasts very well with the orange fruits."

48689 to 48750—Continued.

48727. *PITTSPORUM TOBIRA* (Willd.) Ait. Pittosporaceæ.

"(Nagasaki, Japan. October 10, 1919.) Grows wild in the hills back of the experiment station. Of value as an ornamental hedge."

48728. *POLYGONUM* sp. Polygonaceæ.

"(Nagasaki, Japan. October 20, 1919.) An ornamental wild vine growing on cliffs and embankments about Nagasaki. At a distance the plant looks like a flowering clematis, making a white mass on the rocks."

48729. *PRUNUS* sp. Amygdalaceæ. Plum.

"(Foochow, Fukien, China. July 10, 1919.) Obtained in market; a very good green plum."

48730. *PRUNUS* sp. Amygdalaceæ. Plum.

"(Foochow, Fukien, China. July 10, 1919.) A red plum; very dark flesh; a good variety."

48731. *PRUNUS* sp. Amygdalaceæ. Plum.

"(No. 8. Foochow, Fukien, China. July 10, 1919.) 'Nai,' a Green Gage plum grown near Foochow; season middle of June to end of July."

48732. *PRUNUS* sp. Amygdalaceæ. Plum.

"(Kuliang, near Foochow, Fukien, China. July 7, 1919.) A yellowish pink translucent plum of large size, obtained from Mr. James Ford, who obtained the plum from a missionary at Inghok, Fukien. This plum was not seen in the Foochow markets."

48733. *RHUS SUCCEDANEA* L. Anacardiaceæ.

"(No. 11. Saigo, near Nagasaki, Japan. October 10, 1919.) Very common south of Moji; formerly widely cultivated for its oil, but now neglected because of the introduction of kerosene and electricity."

"This plant produces a fruit containing a nut from which, when warmed, an oil is expressed which acquires the consistency of suet and serves for making candles." (*Hogg, Vegetable Kingdom*, p. 242.)

48734. *RHYNCHOSIA VOLUBILIS* Lour. Fabaceæ.

"(No. 15. Saigo, near Nagasaki, Japan. October 10, 1919.) A climbing vine, with ornamental flowers and clusters of bright-red pods."

48735. *ROSA* sp. Rosaceæ. Rose.

"(No. 8. Saigo, near Nagasaki. October 10, 1919.)"

48736. *ROSA* sp. Rosaceæ. Rose.

"(No. 9. Saigo, near Nagasaki. October 10, 1919.)"

48737. *ROSA* sp. Rosaceæ. Rose.

"(No. 23. Saigo, near Nagasaki. October 10, 1919.) A small wild rose growing on the barren hills."

48738. *ROSA* sp. Rosaceæ. Rose.

"(Nagasaki, Japan. October 14, 1919.) A clustered rose growing wild in the hills."

48739. *RUBUS BUERGERI* Miquel. Rosaceæ.

"(No. 28. Mogi, near Nagasaki, Japan. October 14, 1919.) The common creeping *Rubus* of this region. The red fruits are good but not large."

48689 to 48750—Continued.

48740. *RUBUS SWINHOOI* Hance. Rosaceæ.

“(Kuliang Hills, near Foochow, Fukien, China. July 3, 1919.) The berries when ripe come off like thinbleberries; they are of good quality, rich dark red in color, with a distinct pleasantly bitter flavor, which makes them of value in hybridization work. The juice of this berry would add flavor to some of our more tasteless *Rubus* fruits.”

48741 and 48742. *RUBUS TRIPHYLLUS* Thunb. Rosaceæ.

48741. “(Kuliang Hills, near Foochow, Fukien, China. October 12, 1919.) A low form, common on the hills.”

48742. “(Kuliang Hills, near Foochow, Fukien, China. September 1, 1919.) A summer-fruited *Rubus* of good flavor, common in this region.”

48743. *SMILAX CHINA* L. Smilacaceæ.

Smilax.

“(No. 10. Saigo, near Nagasaki, Japan. October 10, 1919.) The large bright-red berries make a beautiful show among the dark leaves. The tuberous rhizome has been used for centuries in medicine and is still recognized as having medicinal value.”

48744. *SOLANUM* sp. Solanaceæ.

“(Kobe, Japan. October 26, 1919.) A showy red-berried *Solanum* growing in a mountain ravine; suitable for ornamental planting.”

48745. *SOLANUM* sp. Solanaceæ.

“(Foochow, Fukien, China. September 6, 1919.) A red-fruited annual growing on walls and along roads.”

48746. *STRIGA MASURIA* (Buch.-Ham.) Benth. Scrophulariaceæ.

“(Kuliang Hills, near Foochow, Fukien, China. July 16, 1919.) One plant, found in barren soil. It has an erect flower stalk with a rather showy creamy-white, 2-lipped flower suggesting a small butterfly orchid.”

48747. *SYMPLOCOS CONGESTA* Benth. Symplocaceæ.

“(Kuliang Hills, near Foochow, Fukien, China. July 25, 1919.) A small tree or shrub much like the bay tree of formal gardens. Many were seen pruned like the bay trees grown in tubs in America.”

48748. *TRICHOSANTHES CUCUMEROIDES* (Ser.) Maxim. Cucurbitaceæ.

“(No. 6. Nagasaki, Japan. October 11, 1919.) A climbing vine with very striking scarlet fruit, growing on the fence around the Nagasaki Agricultural Experiment Station citrus orchard.”

48749. *VIBURNUM* sp. Caprifoliaceæ.

“(Saigo, near Nagasaki, Japan. October 10, 1919.) This plant has clusters of bright-red berries which, combined with the dark-green leaves, make it an ornamental highly appreciated by the residents of this region.”

48750. *ZORNIA DIPHYLLO* (L.) Pers. Fabaceæ.

“(Foochow, Fukien, China. September 15, 1919.) This plant, which grows wild in the hills, may be of value as forage.”

48751 and 48752. *RUBUS MACROCARPUS* Benth. Rosaceæ.

Columbian berry.

From Bogota, Colombia. Seeds and plants purchased from Mr. F. L. Rockwood. Received December 4 and 6, 1919.

48751 and 48752—Continued.

"The berry is not in clusters like the common berry, but on the end of a branch like a rose. There are always several together; they bring the bush down with weight. Some of the berries are over 2 inches long when ripe. One berry, which measured $2\frac{1}{2}$ inches long, dropped to pieces while we were bringing it out of the forest. These berries are developed where there is constant moisture, clouds against the mountains, and a temperature of 65° to 68° F. They grow in abundance near Purification, Tolima, where they are pressed for a juice which is claimed to have medicinal properties for curing blood diseases. The line of mountains from Cibate to Fusagusaga, about 9,000 feet altitude, is very prolific in blackberry plants. These do not grow above the coffee line." (*Rockwood.*)

48751. Seeds.**48752. Plants.**

For previous introduction, see S. P. I. No. 45919.

48753 to 48797.

From Johannesburg, Transvaal. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 4, 1919. Quoted notes by Dr. Shantz, except as otherwise stated.

48753. ACACIA CAFFERA (Thunb.) Willd. Mimosaceæ.

"(No. 119. Taungs, Cape Province. September 30, 1919.) These seeds were collected from small trees on a stony ridge. The tree is used only as a timber tree in making native kraals and for firewood. It is one of the more attractive of the native acacias."

48754. ACACIA DENTINENS Burchell. Mimosaceæ.

"(No. 92. Kimberley, Cape Province. September 26, 1919.) Seeds of *Acacia dentinens*, the most prominent acacia of this region. A small, attractive tree, useful only as an ornamental. It grows especially well on rocky, shallow, red soil over limestone."

48755. ACACIA STOLONIFERA Burchell. Mimosaceæ.

"(No. 120. Taungs, Cape Province. September 30, 1919.) Seeds of one of the most attractive and fragrant plants I have found thus far. It is a low bush with upright branches, very little secondary branching, and produces a mass of white sweet-scented flowers. It comes into flower very early and is very pretty and attractive at that time. It is an exceptionally decorative plant."

48756. ADENIA sp. Passifloraceæ.

"(No. 151. East of Pretoria, Transvaal. October 12, 1919.) A plant with a large (storage) stem: interesting chiefly for botanical gardens, etc."

48757. ATRIPLEX sp. Chenopodiaceæ.

"(No. 89. Kimberley, Cape Province. September 21, 1919.) Probably one of the introduced species from low land near Kimberley. Useful as a forage plant on near-alkali land of the southwestern desert area."

48758. AVENA SATIVA L. Poaceæ.**Oats.**

"(No. 102. Kimberley, Cape Province. September 27, 1919.) Oats in market; grown in Orange Free State."

"A small-kerneled variety probably similar to the Sixty-Day oat." (*Warburton.*)

48753 to 48797—Continued.

48759. *AVENA STERILIS* L. Poaceæ.

Oats.

"(No. 103. Kimberley, Cape Province. September 27, 1919.) Oats in market; grown in western province, probably near the Cape."

"The north African (Algerian) type, also commonly grown in South Africa." (*Warburton*.)

48760 to 48762. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

48760. "(No. 80. Prieska, Cape Province. September 27, 1919.)

Seeds of a Kafir melon grown extensively throughout South Africa; used as feed for stock and also for pickles and preserves. After five months on the shelf at Prieska the flesh of this melon was firm and still white. It is especially valuable on account of its long-keeping qualities. Should do well anywhere in the United States. Grown along with corn by the Kafirs, either under irrigation or under semihumid conditions. It pushes into dry land, but not so far as No. 81 [S. P. I. No. 48761]."

48761. "(No. 81. Seeds of m'tsama melon of the Kalahari collected at Gibeon, German Southwest Africa, by G. W. Lawrence, of Prieska.) This melon grows wild on the great desert and constitutes the chief water supply to travelers and dwellers of that region. This seed may contain both the bitter and the sweet varieties. It should be planted at the beginning of the summer and winter rainy period on both dry land and irrigated land (to insure a supply of seed) at San Antonio, Sacaton, Yuma, Indio, Mecca, Hazen, and Chico.

"By far the most important plant of the Kalahari Desert, if we except the forage grasses, it is valued here as a stock feed and as a food for the natives. It is cooked and the water extracted. Buried in the soil it forms a reservoir of water and a storehouse of food for both man and beast. I see no reason why it should not thrive in a wild state in our warmer deserts, and it may survive on dry lands throughout the Great Plains and intermountain region."

48762. "(No. 117. Taungs, Cape Province. September 30, 1919.)

Watermelon seeds from Chief Malala, one of the Batlapin tribe of Bechuanas of the Taungs district (1,400 square miles). These seeds represent the type of watermelon grown by the natives. They are planted about November 1, when the spring rains come. This melon should be adapted to conditions of the South and Southwest, and possibly the Great Plains. Taungs is a region of scattered camel thorn over a grassland cover somewhat more luxuriant than our mesquite country in Texas. The soil is deep, red, sandy, and shows no hardpan. Apparently, the natives grow fairly good crops of kafir, mealies, and beads. They also keep cattle."

48763. *CITRUS* sp. Rutaceæ.

"(No. 155. Pretoria, Transvaal. October 13, 1919.) Seeds of a rough lemon used widely as a stock for citrus. These seeds were taken from fruit grown on the grounds at Pretoria. The seeds were not in the center of the fruit, but often far out toward the rind. The flavor of the over-ripe lemons is very good. The fruits are about 1½ inches in diameter."

48753 to 48797—Continued.

48764 to 48767. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

48764. "(No. 83. Upington, Cape Province. September 18, 1919.) A large light-colored pumpkin, a staple feed for stock and also for the table, where it is served as we serve squash. This strain is probably well known and is one of the more common types of Boer pumpkin grown throughout South Africa. Almost every kraal has a quantity of these pumpkins on the flat roofs, where they constitute a reserve food supply for man and beast. Produced in a climate similar to that at Yuma, Ariz."

48765. "(No. 118. Taungs, Cape Province. September 30, 1919.) From Chief Malala, of the Batlapin tribe of Bechuanas of the Taungs district (1,400 square miles). This pumpkin is grown with mealies (corn) or kafir, one of the staple crops."

48766 and 48767. "(No. 121. From Kenkelbosch, Transvaal, September 10, 1919.) A few seeds, somewhat smaller than No. 83 [S. P. I. No. 49764], secured from a cattle train. Cattle are fed largely on pumpkin in this section, and this is the variety most often seen."

48766. Brown seeds.

48767. White seeds.

48768. *DIMORPHOTHECA SPECTABILIS* Schlechter. Asteraceæ.

"(No. 152. East of Pretoria, Transvaal. October 12, 1919.) Seeds of an attractive flowering composite with a daisylike or chrysanthemumlike flower. Plants of this character should form a pleasing variety, especially when we see the same old asters, marigolds, etc., in every garden in the world. The plant is very attractive and may prove especially suited to our drought country, the Great Plains and western desert."

48769. *GAZANIA* sp. Asteraceæ.

"(No. 90. Kimberley, Cape Province. September 22, 1919.) A cichoriaceous plant with orange-colored 'single' flowers, 1 to 1½ inches across, produced in great numbers and very attractive border. There seem to be several species similar to this one, some of them white."

48770 to 48772. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(Sorghum vulgare Pers.)

48770. "(No. 111. Kimberley, Cape Province. September 27, 1919.) From the market in Kimberley; ordinary Kafir corn, probably grown in Orange Free State."

48771. "(No. 112. Kimberley, Cape Province. September 27, 1919.) From the market in Kimberley. Egyptian Kafir corn, probably grown in Orange Free State."

48772. "(No. 115. Taungs, Cape Province. September 30, 1919.) Kafir. I was unable to see any but the old fields where some of the stubble remained. The kafir is planted November 1, or as near that date as the spring rains permit. It is planted on ground plowed with a moldboard plow but not worked level. In June or July it is harvested, thrashed by the women with a flail, and winnowed in the wind. The seeds are ground by hand on a flat stone and used as a porridge. The stalks, leaves, etc., are

48753 to 48797—Continued.

fed to cattle. The rainfall in Taungs is about 20 inches, the temperature high, and the soil a deep red sandy loam.

"There appears to be little sale for kafir corn. Mealies (corn) is a money crop, kafir a food crop. From the size of the stems, this seems to be a rather small variety."

48773. HORDEUM VULGARE PALLIDUM Seringe. Poaceæ. **Barley.**

"(No. 108. Kimberley, Cape Province, September 27, 1919.) A hulled awned barley sold in market. Grown in Orange Free State."

48774. LATHYRUS SATIVUS L. Fabaceæ. **Bitter vetch.**

"(No. 97. Kimberley, Cape Province, September 27, 1919.) These seeds were found in bulk in the market mixed with the garden pea, *Pisum sativum*. They were probably all grown at Cape of Good Hope and in the Cape district."

48775 and 48776. MEDICAGO SATIVA L. Fabaceæ. **Alfalfa.**

48775. "(No. 84. Upington, Cape Province, September 18, 1919.) This alfalfa is the type grown on the Orange River. Small fields of alfalfa are the chief source of feed aside from the native grasses. This plant, as seen growing at Upington, looks much like Peruvian alfalfa. It has grown under conditions similar to those at Yuma, Ariz., and the southwestern desert region. (The Province variety grown most extensively of any in South Africa seems to be more like our *Grimm*.) This may possibly be that variety. I have no name for it. The plant is always known as *lucern* in South Africa."

48776. "(No. 104. Kimberley, Cape Province, September 27, 1919.) Alfalfa. Bulk seed sold in market at Kimberley, probably the variety known as *Province*, a favorite strain in South Africa."

48777. MIMUSOPS ZEYHERI Sond. Sapotaceæ.

"(No. 154. East Pretoria, Transvaal. October 12, 1919.) Seeds of *Mimusops zeyheri*, a yellow fruit about 1 inch long, with dry sweet flesh, similar to that of a jujube. This is apparently a very large fruited species of this genus, of which the fruits are said to be delicious. I did not have an opportunity to test them, for I could not find the tree from which the fruits came, and only those not thoroughly ripe had been cast aside by the children who were eating them. It may be well worth cultivating and should be tried first in the South and West (southern Texas seems about the best place, although it may grow much farther north)."

For previous introduction, see S. P. I. No. 29373.

48778. PENNISETUM GLAUCUM (L.) R. Br. Poaceæ. **Pearl millet.**
(*P. typhoideum* Rich.)

"(No. 113. Kimberley, Cape Province, September 27, 1919.) Pennisetum from market; said to be grown in Rhodesia or Transvaal. A cereal common in northern and central Africa."

48779 and 48780. PHASEOLUS VULGARIS L. Fabaceæ. **Common bean.**

48779. "(No. 95. Kimberley, Cape Province, September 27, 1919.) A Kafir native bean sold in bulk in the market, probably grown in Natal by the natives. It is striped and a purer type than No. 94 [S. P. I. No. 48791]."

48753 to 48797—Continued.

48780. "(No. 96. Kimberley, Cape Province. September 27, 1919.)
Sugar beans or *butter beans*, grown in the Cape region and sold
 throughout Cape Province. One of the most common beans for
 human consumption."

48781 to 48783. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"(Nos. 98 to 100. Kimberley, Cape Province. September 27, 1919.)
 Peas in bulk from the market, probably all grown at Cape of Good Hope
 and in the Cape district. These are all in the trade, and apparently they
 are staple food varieties."

48781. "(No. 98.) Very badly mixed."

48782. "(No. 99.) Looks like a field pea."

48783. "(No. 100.) Probably *Stratagem*."

48784. *SALVIA CLANDISTINA ANGUSTIFOLIA* Benth. Menthaceæ.

"(No. 93. Kimberley, Cape Province. September 26, 1919.) A small
 sage which is a biennial with very fragrant foliage. I have not seen it
 in flower."

48785. *SECALE CEREALE* L. Poaceæ. Rye.

"(No. 101. Kimberley, Cape Province. September 27, 1919.) This
 seems to be a winter rye grown in Orange Free State, near Kimberley.
 These seeds were obtained from the market."

48786. *STRYCHNOS PUNGENS* Solereder. Loganiaceæ.

"(No. 149. East of Pretoria. October 12, 1919.) The *Kafir orange*.
 A small tree bearing a large pummelolike fruit with large, pulp-covered
 seeds."

For previous introduction, see S. P. I. No. 34712.

48787. *THEMEDA TRIANDRA* Forsk. Poaceæ. Grass.

"(No. 87. Kimberley, Cape Province. September 21, 1919.) A rather
 coarse Andropogonlike grass occurring occasionally on sandy land. This
 is one of the most dominant grasses of the sweet veld of Africa."

For previous introduction, see S. P. I. No. 47812.

48788 and 48789. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.
 (*T. vulgare* Vill.)

48788. "(No. 106. Kimberley, Cape Province. September 27, 1919.)
 Wheat from the Douglas district; as sold in the market."

48789. "(No. 107. Kimberley, Cape Province. September 27, 1919.)
 Wheat from near Kimberley on the Modder River, Orange Free
 State."

48790. *TRIUMFETTA TRICHOCARPA* Sond. Tiliaceæ.

"(No. 150. East Pretoria, Transvaal. October 12, 1919.) A rather
 inferior fiber plant. It may have other properties worth considering."

48791 to 48793. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

48791. "(No. 94. Kimberley, Cape Province. September 27, 1919.)
 Kafir beans, mostly black, grown by natives and used by them.
 Collected in market where they are sold in bulk. Probably grown
 in Orange Free State. Seed mixed; no attempt made to separate
 the different types. These native beans should be valuable as dry-
 land crops, and many types of cowpeas may be separated from
 them. They constitute one of the chief native foods, next to corn
 and *kafir*."

48753 to 48797—Continued.

48792. "(No. 105. Kimberley, Cape Province. September 27, 1919.) Kafir beans, known as 'native beans,' grown from Natal to the Zambezi River. They are sold to natives, but are not used to any extent for food by Europeans."

48793. "(No. 116. Taungs, Cape Province. September 30, 1919.) Kafir beans grown by Bechuanas of the Batlapin tribe. The climate is extremely dry except for a short rainy period coming in spring, November 1. Beans grown in dry land. Several types can be separated from this lot. Usually the natives dispose of all their seed and bring back seed from the local 'shop.' Should be tried in the Great Plains, the Southwest, and the South. The soil here is deep and red, but the rainfall is not more than about 20 inches. It is warm, however, and in all probability these beans will do better south of central Colorado than north of that line."

48794 and 48795. *ZEA MAYS* L. Poaceæ.

Corn.

48794. "(No. 109. From market at Kimberley, Cape Province. September 27, 1919.) Corn used chiefly for stock feed; a yellow flintlike variety. Probably grown in Orange Free State."

48795. "(No. 114. Taungs, Cape Province. September 29, 1919.) Corn grown by the Batlapins, a tribe of Bechuanas, whose chief, Malala, lives in the staat at Taungs. This type would seem to be ill adapted to so dry a country. The rainfall appears to be about 20 inches. Corn is planted November 1, or when the rains begin, and harvested about June or July. The soil is a deep-red sandy loam. Conditions would require a drought-resistant corn adapted to high temperature, conditions such as are found in western Texas. There seems to be little attempt in Africa to adapt crops to conditions not favorable for them. Corn is selected which gives the best yield in the best corn country and this variety is then grown everywhere. Nor is a short-season corn substituted when rains delay the planting too late a date; the crop is given up for that year."

48796. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 153. East of Pretoria, Transvaal. October 12, 1919.) A native *Ziziphus*, prolific, and an attractive ornamental. Adapted to southern and southwestern Texas."

48797. *MORAEA* sp. Iridaceæ.

"(No. 85. Krankuil, Cape Province. September 19, 1919.) Seed (rather immature) of an attractive yellow lily very abundant along the track at Krankuil. Found in desert regions similar to those in the Southwestern States."

48798 and 48799.

From Johannesburg, Transvaal. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 4, 1919. Quoted notes by Dr. Shantz.

48798. *MORAEA* sp. Iridaceæ.

"(No. 91. Longlands, Cape Province. September 26, 1919.) A very pretty plant like a small iris, but with long leaves and bulbs buried deep in the soil; seems a troublesome plant in irrigated lands where

48798 and 48799—Continued.

wild, but should prove valuable as a decorative plant. The flowers are unusually attractive."

48799. (Undetermined.)

"(No. 88. Kimberley, Cape Province. September 21, 1919.) Unidentified bulbs called *fighol*, probably poisonous to stock, since the bulbs are often found on the top of the ground. Said to have a white flower; may be valuable as an ornamental. Found growing in sandy land north of Kimberley."

48800 and 48801. ACROTRICHE DEPRESSA R. Br. Epacridaceæ.

From Blackwood, South Australia. Presented by Mr. Edwin Ashby. Received December 5, 1919. Quoted notes by Mr. Ashby.

48800. "The better sort from the Barossa Ranges, where they grow in decomposed quartzite with a good deal of humus on rocky hillsides often lightly shaded by gum trees; the rainfall here is at least 25 inches. The fruit is very juicy and is astringent until cooked. The bushes are about 2 feet high. I have a dozen plants in my wild plant garden and in the cultivated part as well. The latter are doing best; they are too young to fruit but will do so next year. The one bush which is bearing carries a good many pints of fruit in masses low down on the main stems, so that they can be gathered in handfuls. The seed germinates very slowly, and will probably be more successful if treated with boiling water. I had one large shrub which died in the drought of 1914; I burnt the dead bush and young plants made their appearance only last spring; it is therefore likely that seed will germinate after being several years in the ground."

48801. "The best known variety of our native currant, which is becoming very scarce since the breaking down of its habitat, the mallee, or dense brushwood, the thicket formed by low-growing eucalypts. The leaf of this variety is smaller than that of the Barossa Range form, as is also the fruit. It grows in the dry country where the rainfall is often under 15 inches and the soil sandy, usually a red sand with superficial limestone rock (travertin)."

Received as *Styphelia depressa*, a later name for the same plant.

48802 to 48833.

From Pretoria, Transvaal. Plant material collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 16, 1919. Quoted notes by Dr. Shantz.

48802. ACACIA ROBUSTA Burchell. Mimosaceæ.

"(No. 158. West of Pretoria. October 14, 1919.) Seed of *Acacia robusta*, a medium-sized tree, good for tannin."

48803. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ.
(*A. arabica* Willd.)

"(No. 144. Wonderboom, Pretoria. October 12, 1919.) A valuable tannin plant. Pods excellent feed, very heavy and nutritious. It is also an attractive tree."

48804. BURKEA AFRICANA Hook. Cæsalpiniaceæ. Rhodesian ash.

"(No. 142. Wonderboom, Pretoria. October 12, 1919.) A beautiful tree; one of the most widely distributed of the African trees."

48802 to 48833—Continued.

A small tree, 6 to 10 feet high, with an open, broad crown. It is found in sandy forests in Mata de Monino. It flowers in November, and the fruits ripen in February. (Adapted from *Hiern, A Catalogue of Welwitsch's African Plants, vol. 1, p. 304.*)

An illustration of this tree is shown in Plate IV.

48805. *CAILLIEA NUTANS* (Pers.) Skeels. Mimosaceæ.
(*Dichrostachys nutans* Benth.)

“(No. 137. Wonderboom, Pretoria. October 12, 1919.) A beautiful shrub or hedge plant; also valuable for posts (not eaten by termites). It has yellow and purple flowers and large, curly pods. It may stand light frost, possibly heavy, but they do not occur where it is found. It is a tree of good form and should grow anywhere in the South, especially at a place like San Antonio, Tex., where the climatic conditions are similar to those of Pretoria.”

48806. *CYPERUS SEXANGULARIS* Nees. Cyperaceæ. Sedge.

“(No. 173. Nelspruit, Transvaal. October 21, 1919.) Root of a sedge with a hexagonal stem. It has a very strong fiber and is most useful for baskets, mats, rugs, and woven work. One of the most promising plants of this kind thus far seen.”

48807. *CARISSA BISPINOSA* (L.) Desf. Apocynaceæ. Amatungulu.
(*C. arduina* Lam.)

“(No. 140. Wonderboom, Pretoria. October 12, 1919.) A beautiful plant for hedges, which bears a small fruit and has very fragrant flowers and fine foliage. It is very drought resistant here. May be valuable as a breeding stock.”

48808. *CHAETOCHELOA ITALICA* (L.) Scribn. Poaceæ. Millet.
(*Setaria italica* Beauv.)

“(No. 168. Johannesburg, Transvaal. October 17, 1919.) Seed of Boer manna purchased in the market.”

- 48809 and 48810. *COMBRETUM SALICIFOLIUM* E. Mey. Combretaceæ.

48809. “(No. 134. Wonderboom, Pretoria. October 12, 1919.) A valuable tree for semidesert river banks, such as are found in the States of the Southwest and the southern Great Plains; yields quantities of gum. A beautiful tree which grows along all water-courses in this arid country, especially along the Vaal and Orange Rivers. Excellent color and good shade.”

48810. “(No. 138. Wonderboom, Pretoria. October 12, 1919.) Another Combretum of similar habit to No. 135, *Combretum* sp. [S. P. I. No. 48812]. There are many species of Combretum in this section; none of them seem as important (to us) as *C. salicifolium*, which should be found useful in the Southwest. Nos. 135 and 138 are good dry-land trees. I have not noticed gum on either, but they are attractive trees and should do well in southern Texas and possibly in southern California. They may be able to stand light frosts.”

Probably a form of *C. salicifolium* different from No. 134 [S. P. I. No. 48809].

48802 to 48833—Continued.

48811. *COMBRETUM ZEYHERI* Sond. Combretaceæ.

"(No. 156. West of Pretoria. October 14, 1919.) Seed of large-fruited *Combretum zeyheri*. Probably the largest fruited species of the genus found in the bush veld of this region. It forms an attractive tree."

48812. *COMBRETUM* sp. Combretaceæ.

"(No. 135. Wonderboom, Pretoria. October 12, 1919.) Grows on dry land away from the river. Not as interesting as No. 134 [S. P. I. No. 48809]."

48813. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ. Pumpkin.

"(No. 169. Johannesburg, Transvaal. October 17, 1919.) Seeds of the Boer pumpkin purchased in the market. For stock and table use."

48814. *CUCURBITA PEPO* L. Cucurbitaceæ. Squash.

"(No. 170. Johannesburg, Transvaal. October 17, 1919.) Vegetable marrow. *Long White* bush. Seeds purchased in the market. For table use, like a summer squash; may be fried also."

48815. *ERAGROSTIS ABYSSINICA* (Jacq.) Schrad. Poaceæ. Teff.

(*Poa abyssinica* Jacq.)

"(No. 166. Teff seed from The Colonial Seed Supply Co., Newton, Johannesburg. October 17, 1919.) Staple hay crop of the high veld. From what I have seen of teff I could almost write a book. It should be tried on the high Plains as far north as Montana. It is the most important plant next to corn in the Transvaal. It grows where there is summer rain; would probably be no good for the Southwest, except the high grasslands of the boundary region of Arizona and New Mexico, where it might do on the high mesas. But it should grow from Amarillo, Tex., to Judith Basin, Mont. When it does well it makes a wonderful hay crop."

48816. *LINUM USITATISSIMUM* L. Linaceæ. Flax.

"(No. 167. Johannesburg, Transvaal. October 17, 1919.) Seed purchased in the market. Standard flax of the high veld."

48817. *OSYRIS ABYSSINICA* Hochst. Santalaceæ.

"(No. 143. Wonderboom, Pretoria. October 12, 1919.) A most prized tannin plant. Try in summer-rain region, say Brownsville or San Antonio, Tex.; also Chico, Calif. It produces a leather of an especially desirable color, and if it could be produced would be in great demand as soon as its value became known to tanners. It would be especially valuable for fancy leathers."

48818. *PENNISETUM CLANDESTINUM* Hochst. Poaceæ. Kikuyu grass.

"(No. 174. Nelspruit, Transvaal. October 21, 1919.) Roots of kikuyu grass."

A perennial running grass which grows well on any soil and adapts itself to the varying climatic conditions of South Africa. It is a summer grass, but withstands a considerable degree of cold. In a wet winter it keeps green all the time, in spite of heavy frosts, and even makes some growth. In the spring it starts growing before the veld grasses. For drought-resistance kikuyu is great and has no rival. When the surrounding veld is dry and withered it remains green, giving one the impression of an irrigated field of forage. All kinds of stock

48802 to 48833—Continued.

are extremely fond of it, prefer it to other grasses, and will even break fences to get it. The food value is very high, being superior to any of our other grasses.

For soiling dairy cows it is the grass par excellence, and we know of no other to equal it in this respect. The grass grows almost as rapidly as lucern, and four or five cuttings can be had in a season. On account of its ability to grow on practically any type of soil and its creeping and bending characteristics, it is an excellent soil binder, on dam walls, on sandy soils, and on eroding slopes. It can be recommended as a grass for planting in a poultry run. Fowls seem very fond of the leaves, and owing to its aggressive nature it can withstand their ravages. Yielding no seed, there is no fear of kikuyu establishing itself voluntarily in an adjoining field. (Adapted from *Agricultural Grasses and Their Culture*, Union of South Africa Department of Agriculture Bulletin No. 5, 1918, p. 32.)

For previous introduction, see S. P. I. No. 41055.

A plat of this grass as it grows wild in Kenia is shown in Plate V.

48819. *PIRAGMITES VULGARIS* (Lam.) B. S. P. Poaceæ. Grass.

"(No. 136. Wonderboom, Pretoria. October 12, 1919.) A bamboolike plant abundant along the river."

48820. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"(No. 171. Johannesburg, Transvaal. October 17, 1919.) A Boer pea which may prove valuable as a summer crop."

48821. *RHUS LANCEA* L. f. Anacardiaceæ.

"(No. 141. Wonderboom, Pretoria. October 12, 1919.) A fine tree for timber, shade, and browse. This tree deserves careful consideration for southern Texas and the Southwest. It is possible that some of these trees will withstand frost and can be pushed farther north."

48822. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"(No. 147. Wonderboom, Pretoria. October 12, 1919.) Castor-oil bean, a common weed in this section. In order not to miss any of the more important strains I am collecting these beans wherever found."

48823. *SCLEROCARYA CAFFRA* Sond. Anacardiaceæ.

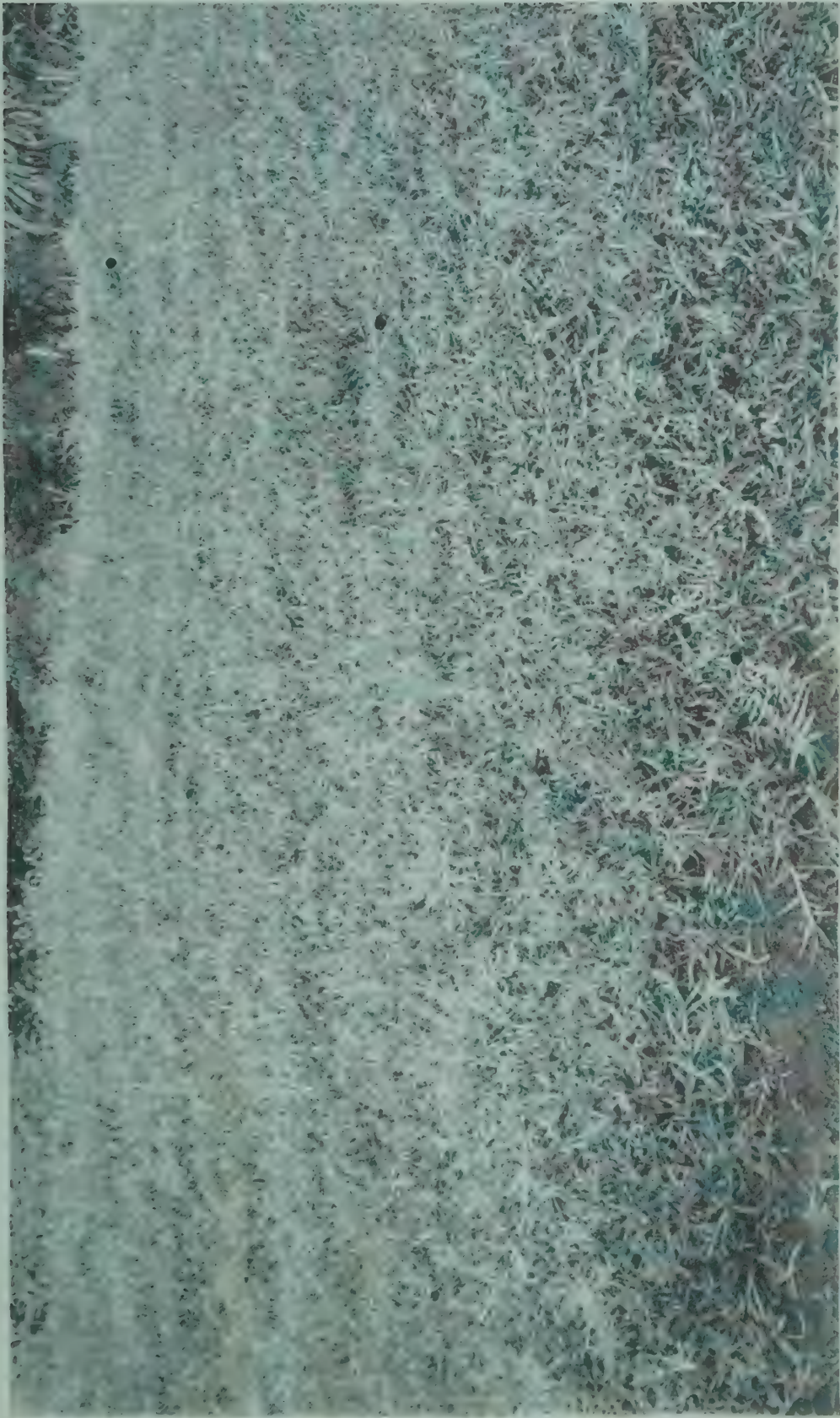
"(No. 139. Wonderboom, Pretoria. October 12, 1919.) *Morula*. A valuable oil-nut tree."

An illustration of this tree is shown in Plate VI.

48824 and 48825. *STRYCHNOS PUNGENS* Solereder. Loganiaceæ.

48824. "(No. 148. East of Pretoria. October 12, 1919.) Fruit of *Strychnos pungens* (Kafir orange), a large pummelolike fruit with large pulp-covered seeds. A small tree."

48825. "(No. 149a. Nelspruit, Transvaal. October 20, 1919.) This fruit is said to constitute an important element of the elephant feed in Mozambique. The trees are abundant about Lourenco Marques, and the fruit often lies thick on the ground. If poisonous, the poison is probably in the seeds themselves; these would not be digested by the elephant. But according to Marloth the seeds of some of the species are eaten. It is all but impossible to clean the pulp from the seeds; these were scoured in dry sand."



KIKUYU GRASS. ONE OF THE MOST VALUABLE FORAGE GRASSES OF AFRICA. (PENNISETUM CLANDESTINUM HOCHST., S. P. I. No. 48818.)

Kikuyu grass has leaves and creeping stems much like those of earl of grass, though much larger and more succulent. It makes a very dense growth; at first the stems are erect, but when they reach 15 or more inches in height they become very decumbent at the base, matting down so that the lower leaves soon die. Hence, this grass is not well suited for making hay. It bears frost about as well as carpet grass, is much more vigorous and productive, is eaten greedily by horses, cattle, and hogs, and promises to be of great value as a pasture grass in the Southern States. (Photographed by Dr. H. L. Shantz, Meru, Kenya, May 30, 1920.)



THE MORULA, A VALUABLE NUT TREE FROM NORTHERN TRANSVAAL. (SCLEROCARYA CAFFRA SOND., S. P. I. No. 48823.)

For dry, practically frost-free regions, the morula may have value. It bears in great abundance small hard-shelled nuts of very pleasant flavor. The fleshy pulp which surrounds these nuts is also edible. The valuable morula oil is extracted from the kernels. The tree, which grows throughout southeastern Africa and in Madagascar, seems likely to succeed in some parts of California. (Photographed by Dr. H. J. Shantz, Wonderboom, near Pretoria, Orange Free State.)

48802 to 48833—Continued.**48826. VIGNA SINENSIS** (Torner) Savi. Fabaceæ.

Cowpea.

"(No. 165. Johannesburg, Transvaal. October 17, 1919.) White cowpeas purchased in the market. Standard cowpea of the high veld."

48827 to 48832. ZEA MAYS L. Poaceæ.

Corn.

48827. "(No. 164. Johannesburg, Transvaal. October 17, 1919.) A bread mealie eaten green; purchased in the market."

48828 to 48832. "(Nos. 159 to 163. Pretoria. October 14, 1919.) Ears collected by Madame A. Dieterlin and presented to me by Dr. E. P. Phillips. Types grown by the Basutos. I am sending in the whole ear in the hope that in this way a judgment may be formed in advance as to any value they may have in breeding work. I consider it unusually fortunate that we could obtain these ears, for they come from one of the least disturbed sections of South Africa, since the Basutos still control their country. This French missionary had lived for years with the natives and probably has given us the most important varieties of corn grown by them. Nos. 159 and 163 I should expect to be of especial interest."

48828. "(No. 159.) Waxy type; mixed."

48829. "(No. 160.) Yellow flint."

48830. "(No. 161.) White flint."

48831. "(No. 162.) White dent."

48832. "(No. 163.) Small waxy."

48833. (Undetermined.) Araceæ.

"(No. 172. Nelspruit, Transvaal. October 21, 1919.) Tubers of a callalike aroid found in dry soil."

48834. CUCUMIS METULIFERUS E. Mey. Cucurbitaceæ.

From Natal, South Africa. Presented by Mr. W. W. Masterson, American consul, Durban. Received December 6, 1919.

"Seed and dried rind of a cucumber that is of a very different variety from the ordinary kind raised in our gardens the world over. * * * The fruits present the appearance of the ordinary cucumber in regard to size and shape, except that they are possibly a little nearer round, and shorter; but the thing that particularly attracts the attention is the long prickles over the outside, like those on the seed pod of a jimson weed. The vegetable is so tender and so easily digested that I have with some difficulty procured this mature specimen for introduction into our country. The taste of the cucumber is there, but the inside of the rind cuts so easily and is so juicy and well flavored that I feel the cultivation of this variety is well worth while." (*Masterson.*)

48835 to 48837.

From Sydney, New South Wales. Presented by the Forestry Commission of New South Wales. Received December 11, 1919.

48835. ATALAYA HEMIGLAUCA F. Muell. Sapindaceæ.

Cattle bush.

One of the inland fodder trees which favorably attracted the attention of stock owners in the early days of pastoral occupation. This tree attains a height of about 30 feet, and is found on large tracts

48835 to 48837—Continued.

of the droughty inlands. It has large, whitish leaves and numerous flowers in terminal clusters, and at all stages of its growth is decidedly ornamental. When grass and other herbage fail it is cut down and the leaves fed to sheep and cattle, which seem to thrive on them. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 33.*)

48836. GEIJERA PARVIFLORA Lindl. Rutaceæ.

Wilga.

A tall shrub or tree, up to 30 feet in height, native to the interior of New South Wales. It has slender branches and narrow leaves, and when full grown is very ornamental, resembling somewhat the weeping willow. Its drought-enduring qualities are remarkable, as it will continue to grow under the most adverse climatic conditions. It is often cut down for feeding to stock, especially sheep, which eat it readily and seem to do well on it. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 132.*)

48837. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.

Quandong.

The quandong, sometimes called "native peach," attains a height of 20 to 30 feet, and is found in the hotter and drier parts of New South Wales. The lanceolate leaves are much relished by cattle, and because of the remarkable drought-enduring properties of this tree it is very valuable in times of scarcity of rain. The fruit is red, from 1½ to 3 inches in circumference, and of considerable economic value. The succulent outer part is edible, and makes an excellent conserve and jelly. The edible kernels have a pleasant flavor and contain a large percentage of oil, which when burned gives a good light. (Adapted from *The Pastoral Finance Association Magazine, Sydney, vol. 5, p. 33.*)

48838. MOURIRIA PUSA Gardn. Melastomaceæ.

Pusa.

(*Ciposia mandapuca* Alv. Silv.)

From Minas Geraes, Brazil. Presented by Dr. Alvaro da Silveira, Bello Horizonte. Received December 27, 1919.

"The fruit is edible; the pulp is sweet and of a flavor most pleasing to the natives." (*Silveira.*)

A small tree, about 10 feet high, with an upright stem and horizontal branches. The obliquely globose, edible fruit is as large as that of the common wild cherry. It is called *pusa* by the natives, who esteem it for its sweet pulp and pleasing flavor. (Adapted from *Hooker's Journal of Botany, p. 23.*)

48839. SAMBUCUS NIGRA L. Caprifoliaceæ.

Elderberry.

From Wiesbaden, Germany. Presented by Mr. Hugo Mulertt. Received October 15, 1919.

"Last year I found growing in an abandoned quarry in the Taunus Mountains, here near the Rhine, a young elderbush (*Sambucus*), bearing apparently for the first time. The fruits instead of being black were greenish golden in color and semitransparent when ripe; the individual berries were about three or four times as large of those of the common *Sambucus nigra* and very sweet and spicy. They were used in cookery and found excellent and quite distinct in taste. The fact, too, that the juice does not stain table linen nor one's teeth is of no little importance. I have propagated it from seeds and cuttings successfully. The bush bore 2½ pounds of fruit last year; this year I gathered 21 pounds from it." (*Mulertt.*)

48840 to 48842.

From Queensland. Presented by Mr. J. A. Hamilton, Kulare, via Cairns.
Received December 4, 1919. Quoted notes by Mr. Hamilton.

48840. BUCKINGHAMIA CELSISSIMA F. Muell. *Proteaceæ*.

"A very ornamental native tree; much frequented by bees."

A tall tree, up to 60 feet in height, with dark-green leaves 3 to 5 inches long, and large racemes of silvery flowers. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 532.)

48841. HELIANTHUS ANNUUS L. *Asteraceæ*. **Sunflower.**

"A double sunflower; very good."

48842. PITTOSPORUM REVOLUTUM Dryand. *Pittosporaceæ*.

"An ornamental bush; sweet scented."

A tall shrub with elliptic leaves 2 to 3 inches long, with rusty-pubescent lower surfaces; the pale-yellow flowers are up to half an inch in length. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2654.)

48843 and 48844. TRICHOLAENA ROSEA Nees. *Poaceæ*.

Natal grass.

From Auckland, New Zealand. Purchased from Arthur Yates & Co. Received December 4, 1919.

"This is a very striking grass, its highly colored appearance when in flower making it very handsome. It is a vigorous grower and attains a height of 3½ feet. A dense mass of leafy succulent herbage is quickly produced in spring and remains until cut down by heavy frosts. It flowers in November and December, and produces a large amount of seed which germinates freely. It resists drought well, and flourishes in poor sandy soil. For growing as green food for poultry it is very valuable, and can be recommended for sowing in fowl yards which require resting." (*A. H. McDonald, Agricultural Gazette of New South Wales*, vol. 19, p. 122.)

48843. Variety atropurpurea. **48844. Variety rosea.**

48845. ROSA LAXA Retz. *Rosaceæ*.

Rose.

From Paris, France. Presented by the Hon. Vicary Gibbs, Aldenham House, Elstree, Hertford, England, through Vilmorin-Andrieux & Co. Received December 4, 1919.

"The longer my experience the more I am impressed with the value of this Siberian brier as a stock for use on medium and light soils. And, further, the testimony of those whom I have persuaded to try it has more than repaid me for my championship of this stock." (*George M. Taylor, Florists' Exchange, May 13, 1916.*)

For previous introduction, see S. P. I. No. 47161.

48846. NICOTIANA TABACUM L. *Solanaceæ*.

Tobacco.

From Santiago de las Vegas, Cuba. Presented by Dr. M. Calvino, director, Agricultural Experiment Station. Received December 4, 1919.

"This seed is the product of four years of field selection, carried out with the greatest possible care and with the purpose of restoring the old genuine Cuban tobacco, the *Havanensis* variety. We sent experts to the very best 'vegas' (tobacco fields) in the Vuelta Abajo region, a comparatively small area

in the central portion of the Province of Pinar del Rio. and they selected the very best plant in all the fields which they visited. That seed was brought to the station and we have been keeping up selection of what we have considered to be the best plants, in order to propagate from them." (*Calvino*.)

48847 and 48848.

From Dunedin, New Zealand. Purchased from Nimmo & Blair, Ltd. Received December 5, 1919.

48847. *PASPALUM RACEMOSUM* Lam. Poaceæ.

Grass.

"A native of tropical America. Best adapted to moist or alluvial soils of the South. Grows from a rootstock, with rather coarse, tender stems and leaves, reaching a height of about 2 feet. Promising as a hay or pasture grass." (*C. V. Piper*.)

48848. *STIPA ELEGANTISSIMA* Labill. Poaceæ.

Grass.

"A native of Australia. Grows well in sandy soil. It has a plumelike spike 6 to 8 inches long, and is frequently used as an ornamental. The leaves are too narrow and stiff to make it of much value for stock, and its sharp-pointed seed with short, stiff reflexed hairs make it objectionable on sheep ranges, where it sometimes works its way through the wool, penetrates the skin, and sometimes even invades the internal organs." (*C. V. Piper*.)

Received as *S. pennata*; a misidentification.

48849 to 48859. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

From Pretoria, Transvaal. Presented by Madame A. Dieterlen, through Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received December 6, 1919.

"(Nos. 125 to 133b. Seed from Leribe, Basutoland. Collected by Madame A. Dieterlen, French missionary.) Heads from a collection in the National Herbarium at Pretoria collected in Basutoland. A valuable collection accompanied by Basuto names of each variety, with Madame Dieterlen's numbers in parentheses." (*Shantz*.)

48849. "No. 125. (A. D. No. 641g. Collected in 1909.) Called by the natives *lejakane*; said to be degenerated Kafir corn. The word 'hojaka' means to leave one's country to go to another, or one's faith to adopt another. It is a name of derision given by the Basutos to those of their people who have adopted Christianity. They are no longer true or pure Basutos. Thus this grain, when mixed with other kinds, is no longer pure *mabèlè* (the generic name for Kafir corn) but a *lejakane*." (*Dieterlen*.)

48850. "No. 126. (A. D. No. 641b. Collected in 1908.) This variety is called by the natives *Letsoeyane*." (*Dieterlen*.)

48851. "No. 127. (A. D. No. 641a. Collected in 1908.) Generic native name, *mabèlè*; this particular variety is called *Kobo-Kholo*, *Kokobala*, or *Seboeane*." (*Dieterlen*.)

48852. "No. 128. (A. D. No. 641b. Collected in 1908.) Called by the natives *Letsoeyane*." (*Dieterlen*.)

48853. "No. 129. (A. D. No. 698.) Height 5 to 7 feet. Flowers summer to autumn. Cultivated by the Basutos. Native name *ntsoe*. The sweet stem is chewed. A preparation of this and *Erigeron canadense*

48849 to 48859—Continued.

is used for eczema; it is applied to the eruption, which is then rubbed with fat. This operation must be performed by the first cousin of the sick person; otherwise, the natives believe it will have no effect. Said to be indigenous." (*Dieterlen.*)

48854. "No. 130. (A. D. No. 641c. Collected in 1909.) Cultivated by Basutos as Kafir corn. Generic Basuto name is *mabèlè*, but this variety is known as *Seghobane*." (*Dieterlen.*)

48855. "No. 131. (A. D. No. 641f. Collected in 1908.) Native name *pakollane*."

48856. "No. 132. (A. D. No. 641g.) See note with No. 125 [S. P. I. No. 48849]."

48857. "No. 133. (A. D. No. 641d. Collected in 1908.) This special variety is called by the natives *Monkoane*." (*Dieterlen.*)

48858. "No. 133a. (A. D. 641h. Collected in 1909.) Near Phuthiat-sana River. Generic Basuto name *mabèlè*, but this variety is known as *Mothulo*." (*Dieterlen.*)

48859. "No. 133b. (A. D. No. 641e. Collected in 1908.) Generic native name *mabèlè*; name for this variety is *Mosothi*." (*Dieterlen.*)

48860 to 48921.

From Northern Circle, Burma. Presented by Mr. E. Thompstone, Deputy Director of Agriculture. Received December 5, 1919. Quoted notes by Mr. Thompstone, except where otherwise noted.

48860 and 48861. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

48860. "Small spherical white seed from Mongpai, Southern Shan States."

48861. "Ovoid, large, gray-to-blue seed from the Northern Shan States."

48862 to 48868. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

48862. "Medium-sized, subcylindrical, mixed, white seed, more slender than the preceding number; from Mongpai, Southern Shan States."

48863. "*Mung-gawng-n'baw*, the local Kachin name for an ovoid large-seeded variety collected at Htawgaw, Kachin Hills in the Myitkyina District of northern Burma, February 25, 1919."

48864. "*Mung-gawng-n'hpraw*, the local Kachin name for a small-seeded variety collected at Htawgaw, Kachin Hills, of the Myitkyina District of northern Burma, February 25, 1919."

48865. "Ovoid, large, blue-to-brown, streaked, edible seed from the Southern Shan States."

48866. "Ovoid, large, brown seed from the Southern Shan States."

48867. "Ovoid, large, gray-to-blue seed from the Northern Shan States."

48868. "Small, subspherical, furrowed, white seed from Lauksauk, Southern Shan States."

48869 to 48875. COIX LACRYMA-JOBI STENOCARPA (Oliver) Stapf. Poaceæ.

48869. "Cylindrical, long, blue seed from the Northern Shan States."

48860 to 48921—Continued.

48870. "Cylindrical, long, blue seed from the Northern Shan States."

48871. "Cylindrical, small, white seed from the Northern Shan States."

48872. "Large, ovoid, furrowed, gray seed from Lauksauk, Southern Shan States."

48873. "Medium-sized, cylindrical, white-to-brown seed from Mongpai, Southern Shan States."

48874. "Medium-sized, subcylindrical, white seed from Mongpai, Southern Shan States."

48875. "Small, cylindrical, white seed from Mongpai, Southern Shan States."

48876 to 48921. *ZEA MAYS* L. Poaceæ.

Corn.

"This corn collection represents a new type, having a waxy endosperm."
(G. N. Collins.)

48876. "*Akyán*, a coarse, early variety, ripening in three months, from the Pakokku Hill tracts."

48877. "*Akyán*, a coarse, late variety from the Pakokku Hill tracts."

48878. "*Asè*, an early variety of grain maize, ripening in three months; from the Pakokku Hill tracts."

48879. "*Asè*, a late variety of grain maize from Pakokku Hill tracts."

48880. "*Black Burmese* maize from the Southern Shan States."

48881. "Black maize from the Southern Shan States."

48882. "Fragrant maize from the Southern Shan States."

48883. "Hard-stemmed maize from the Southern Shan States."

48884. "*Hsumhsai*, a late variety from the Northern Shan States."

48885. "*Kala-pyaung* (foreign maize; imported maize) from the Southern Shan States."

48886. "*Kayin-pyaung-awa* (yellow Karen maize) from the Southern Shan States."

48887. "*Kayin-pyaung-pyu* (white Karen maize) from the Southern Shan States."

48888. "*Pyaung-wa-kyit* (yellow hard maize) from the Southern Shan States."

48889. "*Mine-sauk-taik-apyá-myo* (blue variety from Mine-sauk-taik) from the Southern Shan States."

48890. "*Nan-mi*, maize from the Southern Shan States."

48891. "Pink maize from the Southern Shan States."

48892. "*Po-thu-daw* maize from the Southern Shan States."

48893. "*Pyaung-amè* (black maize) from the Southern Shan States."

48894. "*Pyaung-apyá-myo* (blue maize) from the Southern Shan States."

48895. "*Pyaung-bu-si-apyu-myo* (white-seeded variety of maize) from the Southern Shan States."

48896. "*Pyaung-bu-si, Pan-yaung-myo* (pink maize) from the Southern Shan States."

48897. "*Pyaung-gyi-myo, Monè* (large maize from Monè) from the Southern Shan States."

48860 to 48921.—Continued.

48898. "*Pyauṅ-hmwè-asi* (fragrant maize) from the Southern Shan States."
48899. "*Pyauṅ-kaûk* (crooked maize) from the Southern Shan States."
48900. "*Pyauṅ-kaukhnyin* (black fragrant) from the Southern Shan States."
48901. "*Pyauṅ-kaukhnyin*, white, from the Southern Shan States."
48902. "*Pyauṅ-kyaukhnyin-payaung* from the Southern Shan States."
48903. "*Pyauṅ-pyu* (white maize, early variety) from the Southern Shan States."
48904. "*Pyauṅ-pyúk-myo* (maize, boiling variety) from the Southern Shan States."
48905. "*Pyauṅ-sán, Monè* (grain maize from Monè) from the Southern Shan States."
48906. "*Pyauṅ-thu-daw* (honest or true maize) from the Southern Shan States."
48907. "*Pyauṅ-wa-akyán* (coarse yellow maize) from the Southern Shan States."
48908. "*Se-gyi* maize from the Southern Shan States."
48909. "*Shan-pyaung-asi-myo* (Shan grain maize) from the Southern Shan States."
48910. "*Shan-pyaung-pyu* (white Shan maize) from the Southern Shan States."
48911. "*Shan-pyaung-wa* (yellow Shan maize) from the Southern Shan States."
48912. "*Thadin-kyôt-pyaung, Monè* (October maize from Monè) from the Southern Shan States."
48913. "*Thi-kaung-awa* (yellow 'good grain') from the Southern Shan States."
48914. "Unnamed variety from the Northern Shan States."
48915. "*Wêt-ma-lût-pyaung-ani-myo* (red dwarf maize) from the Southern Shan States."
48916. "*Wêt-ma-lût-pyaung-wa* (yellow dwarf maize) from the Southern Shan States."
48917. "*We-wun-wot-saung*, maize from the Southern Shan States."
48918. "White-seeded variety from the Southern Shan States."
48919. "*Yun-pyaung, apwin-hla-ka-myo, Mine-sauk-taik* (pretty-flowered maize from Mine-sauk-taik) from the Southern Shan States."
48920. "*Yun-pyaung-awa* (yellow maize) from the Southern Shan States."
48921. "*Ywin-pyaung-ni-kyât* (stiff red Ywin maize) from the Southern Shan States."

48922. *PENTAGONIA PHYSALODES* (L.) Hiern. Solanaceæ.
(*Nicandra physaloides* Gaertn.)

From Alta Vera Paz, Guatemala. Presented by Mr. Harry Johnson.
Received December 8, 1919.

"A blue-flowered solanaceous plant; fruit inclosed in husk as in *Physalis*. Flowers campanulate, an inch or more in diameter, light blue with lighter throat; produced singly in the axils of the leaves similar to the Canterbury bell." (*Johnson*.)

48923. ALLIUM ANGULOSUM L. Liliaceæ.

Onion.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 9, 1919.

"An onion, originally from Tonkin, French Indo-China, the leaves of which are used like chives." (*Trabut*.)

48924 to 48974. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.

(*M. utilissima* Pohl.)

Cassava.

From the Belgian Kongo. Cuttings presented by Prof. Edmund Leplae, director general, Ministère des Colonies, Brussels, Belgium. Received December 10, 1919. Quoted notes by Prof. Leplae.

48924. "No. 1."

48929. "No. 6."

48925. "No. 2."

48930. "No. 7."

48926. "No. 3."

48931. "No. 8."

48927. "No. 4."

48932. "No. 9."

48928. "No. 5."

"The preceding numbers were without varietal names and are the collection of M. Gisseleire, originally from the Botanic Garden, Buitenzorg, Java."

48933. "No. 10. *Mandungu lo-poma*."

48953. "No. 31. *Ysakama*."

48954. "No. 32. *Lokaka*."

48934. "No. 11. *Likimi molem-be*."

48955. "No. 33. *Yambevua*."

48956. "No. 35. *Elemeka*."

48935. "No. 12. *Musa gombe*."

48957. "No. 36. *Lokole*."

48936. "No. 13. *Mandungu mokonga*."

48958. "No. 37. *Bolibo*."

48959. "No. 38. *Kanga*."

48937. "No. 14. *Songi*."

48960. "No. 39. *Longere*."

48938. "No. 15. *Molangola*."

48961. "No. 40. *Keka*."

48939. "No. 16. *Ikeke*."

48962. "No. 41. *Gombe*."

48940. "No. 17. *Pensentumba*."

48963. "No. 42. *Yewaka*."

48941. "No. 19. *Ekakasi*."

48964. "No. 45. *Mobwana bilikwi*."

48942. "No. 20. *Bichi-le*."

48965. "No. 51. *Bokoletaka*."

48943. "No. 21. *Bogambo*."

48966. "No. 59. *Langombo*."

48944. "No. 22. *Ketu*."

48967. "No. 63. *Djibondji*."

48945. "No. 23. *Gubu*."

48968. "No. 71. *Yagadjo*."

48946. "No. 24. *Itolo*."

48969. "No. 78." (No name.)

48947. "No. 25. *Bomai*."

48970. "No. 91." (No name.)

48948. "No. 26. *Soli*."

48971. "No. 93. *Emeta*."

48949. "No. 27. *Elemba*."

48972. "No. 103." (No name.)

48950. "No. 28. *Sumboela*."

48973. No. 28438. (No name.)

48951. "No. 29. *Benzo*."

48974. No. 29439. (No name.)

48952. "No. 30. *Songi*."

48975. PHYTOLACCA DIOICA L. Phytolaccaceæ.

Ombu.

From Sawtelle, Calif. Fruits presented by Mr. P. D. Barnhart. Received December 11, 1919.

An ornamental evergreen tree, native to Brazil, ranging from Sao Paulo up to Rio Grande do Sul and Minas Geraes. The wood is used for making boxes

and chests; when reduced to ashes it is a valuable source of potash. The roots are nutritious, and are eaten by pigs; the bark of the roots is medicinal. (Adapted from *Correa, Flora do Brazil*, p. 71.)

For previous introduction, see S. P. I. No. 42542.

48976 to 48979.

From Adelaide, South Australia. Purchased from E. & W. Hackett, Ltd.
Received December 12, 1919.

48976. *AGROSTIS NEBULOSA* Boiss. and Reut. Poaceæ. **Grass.**

"*Bouquet grass.* A slender perennial grass, native to the Mediterranean region, grown chiefly as an ornamental for dry bouquets. It has little promise as forage, but may be useful as a turf grass." (C. V. Piper.)

48977. *ASTREBLA TRITICOIDES* (Lindl.) F. Muell. Poaceæ. **Grass.**

"*Mitchell grass.* This is a perennial, native to Australia, where it is highly valued as a range grass and to some extent has been brought into cultivation. Experiments with it thus far in the United States have not shown that it is of any particular promise under the conditions tried, but in view of its high value in Australia further investigations of this kind are being carried on. Like many of our native western grasses, cattle fatten on the grass even after it is entirely dried." (C. V. Piper.)

48978 and 48979. *ORYZOPSIS MILIACEA* (L.) Benth. and Hook. Poaceæ. **Grass.**

48978. "*Smilo grass.* A perennial grass, native to the Mediterranean region, and in Australia it is known as veld grass. In California it has been called smilo grass, San Diego grass, mountain rice, and many-flowered millet. Under Californian conditions it has exhibited considerable promise and may prove to be an important grass. It has been generally introduced into Australia and New Zealand, where it possesses considerable merit." (C. V. Piper.)

48979. Received as *Piptatherum thomasi*.

48980. *MENTHA PIPERITA* L. Menthaceæ. **Peppermint.**

From Sapporo, Japan. Rhizomes presented by Mr. Koji Abiko, agronomist, Hokkaido Agricultural Experiment Station. Received December 12, 1919.

"*Akamura* peppermint, the Japanese variety which yields the most oil. The name *Akamura* means that the plant has red stalks and round leaves. This is the best variety and the one most popularly cultivated in Hokkaido." (Abiko.)

Introduced for experimental purposes.

48981. *CANARIUM INDICUM* Stickm. Balsameaceæ. **Kanari.**
(*C. commune* L.)

From Buitenzorg, Java. Purchased from Mr. R. D. Rands, Department of Agriculture. Received December 13, 1919.

The Java almond, cultivated in the Dutch Indies on account of its seeds, which resemble in form the almonds of *Prunus amygdalus*; they are somewhat longer than these almond kernels, with a slanting surface at the top and two wartlike protuberances on the under side toward the tip. From the kernels, 65.73 per cent oil can be obtained by extraction with petroleum ether; by

pressure 56.12 per cent may be obtained. The pressed residue gives a pleasant cocoalike odor. The contained oil is bright yellow, odorless, of a pure, pleasant taste, and might very well be used as a food fat. The air-dried kernels contain the following constituents (per cent): Fat, 65.73; crude protein, 12.24; crude fiber, 3.81; nitrogen-free extractives, 6.00; ash, 3.19; water, 9.03. (Adapted from *Pastrovitch, Chemiker-Zeitung, No. 63, p. 781.*)

For previous introduction, see S. P. I. No. 43375.

48982 to 49002.

From Castlemaine, Victoria. Presented by Mr. John W. B. Field. Received December 11, 1919.

48982. *ACACIA ACUMINATA* Benth. Mimosaceæ.

Raspberry jam.

An Australian tree, 30 to 40 feet in height, whose wood has a scent resembling that of raspberry jam; hence its name. The wood of this tree is dark reddish brown, close grained, and hard, is suitable for ornamental purposes, and is much sought after for fence posts. (Adapted from *Maiden, Useful Native Plants of Australia, p. 349.*)

48983. *CALLITRIS ROBUSTA* R. Br. Pinaceæ.

(*Frenela robusta* A. Cunn.)

A tall tree, 60 to 70 feet in height, related to the pine, found throughout Australia, except in the north-central portion. The timber is straight grained, durable, and beautifully figured, varying from light to dark brown, with pinkish streaks. The wood is fragrant, having a somewhat camphoraceous odor, and resists, to a great extent, attacks of white ants. It is used for furniture, flooring, weatherboards, etc. (Adapted from *Maiden, Useful Native Plants of Australia, p. 544.*)

48984. *CANNA* sp. Cannaceæ.

Canna.

"*Field's Branching Scarlet.* A great blooming variety." (*Field.*)

48985. *CANNA* sp. Cannaceæ.

Canna.

"Very large, yellow, spotted with red. A continuous bloomer." (*Field.*)

48986. *EUCALYPTUS ACCEDENS* Fitzg. Myrtaceæ. Powder-bark wandoo.

An Australian tree which attains a height of 60 feet, with a crooked trunk 2 feet in diameter, and smooth grayish or white bark. The alternate, ovate or lanceolate leaves are thick, rigid, and pale green, and less than 4 inches in length. Analysis of the bark has shown it to contain nearly 45 per cent of tannic principle. (Adapted from *The Journal of the West Australian Natural History Society, vol. 1, p. 21.*)

48987. *EUCALYPTUS CORNUTA* Labill. Myrtaceæ.

A rapid-growing Australian tree, usually not of great height, often planted as a windbreak. The wood is very hard, heavy, tough, and elastic, and is used for vehicles, implements, and boat ribs. The tree prefers moist soil and will endure much rain, but is also quite drought resistant. It has endured a minimum temperature of 23° F. in southern Florida. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48988. *EUCALYPTUS DIVERSICOLOR* F. Muell. Myrtaceæ.

Karri gum.

A tall tree, up to 350 feet in height, native of western Australia, straight in habit and a fairly rapid grower. The very dense and elastic wood is considered superior timber, being used by wheelwrights and

48982 to 49002—Continued.

for shipbuilding. In Florida this tree does best near the coast on granite soils; it prefers a moist climate and is quite frost resistant, but it does not endure a dry heat. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48989. EUCALYPTUS GOMPHOCEPHALA DC. Myrtaceæ. Tooart.

A large, symmetrical Australian tree of fairly rapid growth, reaching a height of 100 to 120 feet. The wood is very heavy, tough, and strong and is difficult to split. It is used for shipbuilding, bridges, and docks. The tree will endure but little frost and prefers limestone soils. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48990. EUCALYPTUS MACROCARPA Hook. Myrtaceæ.

A stout shrub or small tree, 6 to 15 feet in height, with very thick, rigid leaves 6 inches or more in length, and very large, solitary, orange to crimson flowers. It is a native of western Australia, and is chiefly valuable because of the ornamental character of its glaucous foliage and brilliant bloom. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 224*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1153.*)

48991. EUCALYPTUS MARGINATA J. E. Smith. Myrtaceæ. Jarrah.

A very large, tall, slender Australian tree, often clear of branches for two-thirds of its height. The hard, very durable wood is used for timber, piles, and railway ties. The tree will grow in a great variety of soils, but prefers moist, well-drained situations. (Adapted from *Zon and Briscoe, Eucalypts in Florida, Forest Service Bulletin No. 87, p. 44.*)

48992. EUCALYPTUS MEGACARPA F. Muell. Myrtaceæ. Blue gum.

A tall tree, native to western Australia, with smooth, grayish white bark and thick, smooth, lanceolate leaves up to 6 inches in length. The thick, hard fruits are depressed-globular and about an inch in diameter. (Adapted from *Bentham, Flora Australiensis, vol. 3, p. 232*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1156.*)

48993. EUCALYPTUS OCCIDENTALIS Endl. Myrtaceæ. Brown mallet.

A spreading shrub or medium-sized tree, native to southwestern Australia, with lanceolate leaves up to 5 inches in length. The stamens are yellowish or orange, and the fruits are bell-shaped with a spreading rim. The timber is hard, strong, and durable and is much used for posts, fence rails, etc. (Adapted from *Maiden, Useful Native Plants of Australia, p. 499*, and from *Bailey, Standard Cyclopedia of Horticulture, vol. 2, p. 1154.*)

48994. EUCALYPTUS OLEOSA F. Muell. Myrtaceæ.

A shrub or small tree with thick, smooth, mostly lanceolate leaves less than 4 inches long. From the foliage of this Australian tree is obtained a yellowish oil with a pleasant mintlike or camphoraceous odor. Baron von Mueller found that 100 pounds of this foliage (of which perhaps half the weight consisted of branchlets) yielded 62½ ounces of oil of 0.911 specific gravity at 70° F., boiling at 341° F. (Adapted from *Maiden, Useful Native Plants of Australia, p. 272*, and from *Bentham, Flora Australiensis, vol. 3, p. 248.*)

48982 to 49002—Continued.

48995. *EUCALYPTUS PATENS* Benth. Myrtaceæ.

Blackbutt.

This eucalypt is found in southwestern Australia, where it attains a height of 100 feet and a diameter up to 6 feet. The durable, tough timber is used by wheelwrights, and is said not to split. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 501.)

48996 and 48997. *EUCALYPTUS PYRIFORMIS* Turcz. Myrtaceæ.

A shrub or small tree, found in western and southern Australia, where it attains a height of 8 to 12 feet. The very thick narrow leaves are rarely more than 3 inches long, and the large flowers are red when fresh. The yellowish white timber is hard, heavy, and durable. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 226, and from *Maiden, Useful Native Plants of Australia*, p. 507.)

48996. "Yellow Mallet." (Field.) 48997. "Red Mallet." (Field.)

48998. *EUCALYPTUS REDUNCA* Schauer. Myrtaceæ.

Wandoo gum.

This tree, which reaches a height of 120 feet in western Australia, where it is native, furnishes a pale, hard, particularly tough and durable timber, much prized for building purposes, various implements, etc. The seasoned wood weighs about 70 pounds per cubic foot. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 508.)

48999. *EUCALYPTUS SALMONOPHLOIA* F. Muell. Myrtaceæ. Salmon gum.

An Australian tree with shining green leaves which have numerous oil dots; the slender-stalked umbels of flowers are solitary. It is a smooth-barked species and is considered promising for dry interior valleys of the southwestern United States. (Adapted from *McClatchie, Eucalypts Cultivated in the United States, Bureau of Forestry Bulletin No. 35*, p. 96.)

49000. *EUCALYPTUS SALUBRIS* F. Muell. Myrtaceæ.

Gimlet wood.

A tree with smooth shining bark and thin, dark-green leaves with numerous oil dots. The timber is valuable, and the leaves are rich in oil. It is a native of Australia, endures high temperatures and considerable frost, and is considered promising for desert regions in the United States. (Adapted from *McClatchie, Eucalypts Cultivated in the United States, Bureau of Forestry Bulletin No. 35*, p. 98.)

49001. *EUCALYPTUS TETRAPTERA* Turcz. Myrtaceæ.

A shrub or small tree, native to western Australia, with very thick and rigid narrow leaves which occasionally become 10 inches in length. The tree is very ornamental because of the foliage and because of the fact that just before the lid falls off the fruit the calyx tube and the stalk become a brilliant crimson. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 228, and from *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 1154.)

49002. *STERCULIA DIVERSIFOLIA* Don. Sterculiaceæ.

Kurrajong.

This exceedingly fine ornamental evergreen tree occurs over a great part of New South Wales from the vicinity of the coast to far inland. Its shining-green leaves, from 2 to 6 inches long, are variable in shape, some being deeply lobed and some entire. The nearly ovoid fruit, up to 3 inches long, contains about 20 seeds, which, when ground, form an excellent substitute for coffee. On the dry lands in the interior in adverse seasons the leaves of the *kurrajong* are fed to stock, and cattle

48982 to 49002—Continued.

and sheep are very fond of this fodder. The tree is easily grown from seeds. (Adapted from *The Pastoral Finance Association Magazine, Sydney, New South Wales, vol. 5, p. 32.*)

49003. PENNISETUM LATIFOLIUM Spreng. Poaceæ. Grass.

From Algiers, Algeria. Presented by Dr. L. Trabut. Received December 16, 1919.

"An ornamental and forage grass from the Algiers Botanic Garden; obtained November, 1919." (*Trabut.*)

A tall perennial, quick-growing, nutritious grass, native to Argentina, forming large tufts and readily spreading from the roots and seeds. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 364.*)

49004. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ. Algaroba.

From Honolulu, Hawaii. Presented by Mr. J. M. Westgate, agronomist in charge, Hawaii Agricultural Experiment Station. Received December 20, 1919.

This tree is one of the most valuable that has been introduced into the Hawaiian Archipelago, where it flourishes at an altitude between 800 and 1,000 feet and often forms thick forest belts. In addition to being one of the best sources of honey, the pods and seeds of the algaroba are valuable for cattle and poultry, the quantity consumed in this way each year being estimated at 500,000 sacks. It is stated that the seeds might be more digestible if they were crushed, but to accomplish this they must either be soaked in water or special crushers must be used. They can be kept in perfectly good condition for six to eight months; their market value is between \$7.50 and \$10 per ton. (Adapted from *Journal d'Agriculture Tropicale, No. 113, p. 351.*)

For previous introduction, see S. P. I. No. 46973.

49005. BARLERIA CRISTATA L. Acanthaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 22, 1919.

A small, elegant shrub, found throughout India, with showy, blue, funnel-shaped flowers. It is often grown in gardens and is useful as a hedge plant. (Adapted from *Watt, Dictionary of the Economic Plants of India, vol. 1, p. 399.*)

49006 to 49015.

From Medellin, Colombia. Presented by Mr. W. O. Wolcott. Received December 23, 1919. Quoted notes by Mr. Wolcott.

49006. ANNONA MURICATA L. Annonaceæ. Soursop.

"Seed taken from a fruit that measured 19 inches in length and 13 inches in diameter and weighed 23 pounds. The outside was covered with hooked spines, 1 to 1½ inch long. The whole fruit had no rust or blemish, such as is usually found on fruits weighing from 6 to 10 pounds. I have never seen one like this before."

For previous introduction, see S. P. I. No. 45933.

49007. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

"Marmon seeds."

For previous introduction, see S. P. I. No. 45955.

49006 to 49015—Continued.

49008. *ANNONA SQUAMOSA* L. Annonaceæ.

Sugar-apple.

"Guanabana seeds."

For previous introduction, see S. P. I. No. 47875.

49009. *CARICA PAPAYA* L. Papayaceæ.

Papaya.

"Papaya seed."

For previous introduction, see S. P. I. No. 47586.

49010. *CITRUS NOBILIS DELICIOSA* (Ten.) Swingle. Rutaceæ.

Mandarin orange.

The so-called Mandarin orange, said to have been introduced from China into England in 1805 by Mr. Barrow and now grown in all warmer parts of the globe, is undoubtedly a native Chinese species, probably improved by selection through centuries of cultivation. (Adapted from *Sargent, Plantae Wilsonianae, vol. 2, p. 143.*)

For previous introduction, see S. P. I. No. 45933.

49011. *CUCURBITA FICIFOLIA* Bouche. Cucurbitaceæ.

Alcallota.

"Oyama (green pumpkin) seed."

For previous introduction, see S. P. I. No. 42970.

49012. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Squash.

"Seed of 3-foot yellow *anyama* (pumpkin squash)."49013. *HELIANTHUS ANNUUS* L. Asteraceæ.

Sunflower.

"Seed of a 16-inch sunflower."

49014. *HYLOCEREUS POLYRHIZUS* (Weber) Britt. and Rose. Cactaceæ.

"Seed from a light-red fruit with blood-red pulp of pleasing taste. This fruit weighed 18 ounces, but they often grow to a weight of 1½ to 2 pounds. The stalk is long and straggly, and three-fourths of an inch in diameter."

A slender vine, normally 3-angled, at first green or purplish but soon becoming white and afterwards green again: the ribs or wings are comparatively thin, although in age becoming more turgid. The vine bears two to four rather stout brownish spines and strongly fragrant flowers, purple in the bud, the outer perianth segments later reddish, the inner nearly white; the ovary is covered with red or deep-purple margined scales which later are entirely red. (Adapted from a note by Dr. J. N. Rose.)

49015. *PASSIFLORA QUADRANGULARIS* L. Passifloraceæ.

Granadilla.

"Seeds from a fine *badca* fruit, from 10 to 12 inches long and 4 to 6 inches in diameter, similar in appearance to a big ripe cucumber, but twice as thick. The pulp is fine to eat with a spoon; the rind is very thick (half an inch or more), and might be used for making preserves or sweet pickles. The vine is very long and thick and should be trained on a fence or trellis, or even up a tree."

For previous introduction, see S. P. I. No. 45016.

49016. *PASPALUM PLICATULUM* Michx. Poaceæ.

Black-grass.

From Bogota, Colombia. Collected by Mr. M. T. Dawe. Received December 24, 1919.

"A pasture grass indigenous to and now cultivated to some extent on the Llanos of San Martin and known as *black-grass* (*pasto negro*). (Dawe.)

49017 to 49019.

From Auckland, New Zealand. Purchased from E. C. Pilkington & Co.
Received December 24 and 27, 1919.

49017. DANTHONIA PILOSA R. Br. Poaceæ. Grass.

An excellent pasture grass which, like others of the genus, seeds freely and gives good feed in early spring. Native to southern Australia. (Adapted from *Bailey, Queensland Flora*, p. 1891.)

For previous introduction, see S. P. I. No. 31496.

49018. DANTHONIA SEMIANNULARIS (Labill.) R. Br. Poaceæ. Grass.

Spreading through the pastures, this native species, known as *Wallaby grass*, is becoming very popular, and rightly so, too. It is a perennial tufted grass, producing fair crops of succulent soft fodder, suitable for either sheep or cattle. The leaves are narrow, usually hairy, and light green. The flower stems grow to a height of 2 to 2½ feet; the seed, which sheds easily, is produced in clusters that have a woolly white appearance when ripe. *Wallaby grass* provides good feed during the spring and summer and remains green in the winter months. (Adapted from *The Agricultural Gazette of New South Wales*, vol. 28, p. 286.)

49019. MICROLAENA STIPOIDES (Labill.) R. Br. Poaceæ. Meadow rice-grass.

A slender perennial grass plentiful in lowland districts of Australia and New Zealand, chiefly near the sea. It is a most valuable pasture and lawn grass, deserving of far more attention than has hitherto been given to it. (Adapted from *Cheeseman, Manual of the New Zealand Flora*, p. 852.)

For previous introduction, see S. P. I. No. 44802.

49020. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Kaying, Kwangtung, China. Tubers presented by Rev. J. H. Giffin, American Baptist Academy. Received December 26, 1919.

"*Penang*. Here in Kaying the *Penang* taro is considered delicious, but it does not grow large. The corm of the *Penang* taro is usually larger than that of other kinds, but the small tubers are smaller than those of other kinds. There are also fewer tubers; that is, a *Penang* corm has usually not more than four small tubers, while other varieties have many." (*Griffin*.)

"The *Penang* taro is considered to be the finest flavored of all the known varieties of this important food crop. It is distinguished from other taros by the purple fibers which traverse the white flesh and by a characteristic delicious fragrance which develops during cooking. The *Penang* differs also from the *Trinidad* dasheen and many other varieties of taro in that the corm, when grown under favorable conditions, is distinctly elongated instead of being roundish or oval. Unlike the *Trinidad* dasheen and similar varieties, the *Penang* taro produces usually not more than two or three cormels, or lateral 'tubers,' of marketable size; the crop therefore consists mainly of corms, which range from one to eight pounds or more each in weight. Unfortunately, this delicious taro is a rather poor keeper as compared with varieties of the dasheen type. Corms and cormels are acrid in the raw state.

"The meaning of the name *Penang* as applied to this taro is uncertain, but the Chinese character from which it is derived is said to be the same as that for 'betel nut.' Other renderings of the name are *Pat-long*, *Paan-long*, and *Banlung*." (*R. A. Young*.)

49021. CAPSICUM ANNUUM L. Solanaceæ.**Red pepper.**

From Barcelona, Spain. Purchased from Hijos de Nonell through Mr. C. B. Hurst, American consul general. Received December 27, 1919.

"Spanish sweet pepper, known as *pimiento dulce morrón muy grande*. The seed is to be sown from February to June. The first sowing should be in a hothouse or in a sheltered place." (*Nonell*.)

49022. BARLERIA STRIGOSA Willd. Acanthaceæ.

From Cairo, Egypt. Presented by the director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received December 29, 1919.

A small, unarmed shrub, 2 to 4 feet in height, much cultivated in India and the Malay Peninsula, and native to northeastern India. The large, ovate leaves and dense, almost globose spikes of blue flowers make this a very showy garden plant. (Adapted from *Hooker, Flora of British India*, vol. 4, p. 489.)

Received as *Barleria caerulea*, a later name for this species. For previous introduction, see S. P. I. No. 47834.

49023. PROSOPIS CHILENSIS (Molina) Stuntz. Mimosaceæ.*(P. juliflora DC.)***Algaroba.**

From Puerto Cabello, Venezuela. Presented by Mr. George R. Phelan, American vice consul. Received December 30, 1919.

"The trees producing these pods, known by the name of *Cuji*, grow extensively in this region." (*Phelan*.)

For previous introduction, see S. P. I. No. 46972.

49024. BRASSICA OLERACEA VIRIDIS L. Brassicaceæ.**Jersey tree-kale.**

From St. John, Jersey, Channel Islands. Presented by Mr. D. R. Bisson. Received December 30, 1919.

"This plant is found very useful here as food for chickens, rabbits, and pigs, as the leaves can be stripped off continually and the plant keeps growing. In Jersey the stalks of this plant have been known to attain a height of 18 feet and when dried are turned into light and strong walking sticks. The young sprouts in early spring form a very acceptable vegetable for the table." (*Bisson*.)

For previous introduction, see S. P. I. No. 46475.

49025 and 49026.

From St. Jean-le-Blanc, Loiret, France. Presented by Edmond Versin. Received December 30, 1919.

49025. ALBIZZIA LOPHANTHA (Willd.) Benth. Mimosaceæ.

Variety *Neumanniana*. A tall shrub or small tree with velvety pubescent branches and stems, and compound leaves composed of 8 to 10 pairs of pinnæ and 20 to 30 pairs of pinnules. The flowers are in loose, cylindrical, axillary spikes up to 3 inches in length, and the pods are very flat and often more than 3 inches long. Cattle are fond of browsing on the leaves of this tree, which is of rapid growth. The bark contains about 8 per cent of tannin, and the dry root contains about 10 per cent of saponin. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 421, and from *Maiden, Useful Native Plants of Australia*, p. 116.)

For previous introduction, see S. P. I. No. 44957.

49025 and 49026—Continued.**49026. PASSIFLORA GRACILIS Jacq. Passifloraceæ.**

A Brazilian granadilla of climbing habit and with smooth slender stems. The 3-lobed, membranous leaves are up to 3 inches long and as wide. The apetalous flowers, about 2 inches in diameter, are borne singly in the axils, and the ovoid, purplish fruits are about 2 inches in length. Adapted from *Martius, Flora Brasiliensis, vol. 13, p. 578.*)

49027. LESPEDEZA STIPULACEA Maxim. Fabaceæ.

From Seoul, Chosen (Korea). Presented by Mr. Ralph G. Mills, Research Department, Severance Union Medical College. Received December 30, 1919.

"This plant seemed to me peculiar in that it was able to grow clear down to the water's edge along the coast where the salt content of the soil must have been considerable. The extent of the growth and the nearness to the high-water mark made me wonder whether this particular strain might be of use in some of our Western States where the alkali or saline content of the soil is trying to most forms of plant life." (*Mills.*)

49028 and 49029.

From Puerto Varas, Chile. Presented by Dr. E. W. D. Holway. Received December 30, 1919.

49028. HIPPEASTRUM sp. Amaryllidaceæ.

"Seeds of a *Hippeastrum* about 2 feet tall, with brilliant crimson flowers, growing on the hills near the sea." (*Holway.*)

49029. SOPHORA TETRAPTERA J. Miller. Fabaceæ.
(*Edwardsia tetraptera* Poir.)

A small tree with exceedingly hard and durable wood. The trunk may attain a diameter of 3 feet. Native to New Zealand, Lord Howe's Island, and also to Juan Fernandez Island, Chile, and Patagonia, where it is called *pelu*. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 512.*)

For previous introduction, see S. P. I. No. 44413.

49030. STADMANNIA OPPOSITIFOLIA Lam. Sapindaceæ.

From Port Louis, Mauritius. Presented by Mr. G. Regnard. Received December 30, 1919.

"The fruits make an excellent jelly, very much like that of the quince." (*Regnard.*)

A large hardwood tree, once frequent in the primeval forests of the island of Mauritius but now becoming scarce. It has alternate, pinnate leaves, dense panicles of inconspicuous flowers, and hard spherical fruits nearly an inch in diameter. (Adapted from *Baker, Flora of Mauritius, p. 60.*)

For previous introductions, see S. P. I. No. 45663.

49031. PETREA ARBOREA H. B. K. Verbenaceæ.

From Bucaranga, Colombia. Seeds purchased from Dr. Enrique Lopez. Received December 31, 1919.

"Seed of a valuable ornamental shrub from the Cordillera de los Andes, known as *mircya*, suitable for parks and gardens. The glossy dark-green leaves are long, slender, and leathery; and the dense globose crown of foliage

is profusely ornamented with long pendent racemes of purple flowers. The small corolla is intensely colored and looks like a violet in the center of the paler lavender of the showy, star-shaped calyx." (*Lopez.*)

49032 to 49050.

From Rochester, N. Y. Collected by Mr. H. E. Allanson and through the courtesy of Mr. Dunbar, of the city parks of Rochester, presented to this office for distribution. Numbered December 31, 1919.

49032. COTONEASTER ZABELI C. Schneid. Malaceæ.

This is the common cotoneaster of the thickets in western Hupeh, China, where it forms a bush up to 8 feet in height, with oval elliptic leaves, pink flowers, and red fruits. (Adapted from *Sargent, Plantæ Wilsonianæ*, vol. 1, p. 166.)

For previous introduction, see S. P. I. No. 45707.

49033 and 49034. JUGLANS RUPESTRIS Engelm. Juglandaceæ. Walnut.

A tree about 50 feet in height, with a short trunk sometimes 5 feet thick and dark yellow-green pinnate leaves 7 to 15 inches in length. The nuts are nearly globose, dark reddish brown to black, and up to 1½ inches in diameter. This walnut is distributed throughout central and western Texas, Arizona, and northern Mexico. (Adapted from *Sargent, Manual of the Trees of North America*, p. 129.)

49033. Ordinary form.

49034. Form with large nuts.

49035. × MALUS DAWSONIANA Rehder. Malaceæ.

Apple.

A tree with ascending or spreading branches, reddish brown bark, clusters of very small white flowers, and yellow or greenish yellow fruits which are pulpy and acid when ripe. This species is interesting as the first known hybrid of *M. fusca*. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 23.)

49036. MALUS GLAUCESCENS Rehder. Malaceæ.

Apple.

(*Pyrus glaucescens* Bailey.)

An arborescent shrub or small tree, with a slender trunk and spreading branches. The leaves are bronze in color when they unfold, becoming yellowish green and turning in autumn to a dull yellow or dark purple. The white or pink flowers, up to 4 cm. in diameter, are borne in umbellike racemes, and the fragrant yellow fruits are from 3 to 4 cm. in diameter. This tree is native to the eastern United States. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 139.)

For previous introduction, see S. P. I. No. 42760.

49037. MALUS NIEDZWETSKYANA Dieck. Malaceæ.

Apple.

(*Pyrus niedzwetskyana* Hemsl.)

A small tree, with dark bark and twigs, purple leaves, and dark purplish red flowers and fruit, even the flesh of the fruit being purple. It is native to Turkestan. (Adapted from *Bulletin of Popular Information* No. 39, *Arnold Arboretum*.)

49038. MALUS PRUNIFOLIA (Willd.) Borkh. Malaceæ.

Apple.

(*Pyrus prunifolia* Willd.)

"For years this was considered a hybrid between *Pyrus baccata* and *P. malus* or other species, but it is now considered by Rehder to be a good species, as yet known only in cultivation, although supposed to

49032 to 49050—Continued.

come from Siberia. It has sessile clusters of white flowers and green, yellow, and red fruits about an inch in diameter." (*Bailey*.)

For previous introduction, see S. P. I. No. 37617.

49039. MALUS SIEBOLDII (Regel) Rehder. Malaceæ.
(*Pyrus sieboldii* Regel.)

Apple.

A low shrub, broader than high, with arching stems. It has the merit of flowering later than other Asiatic crab apples. It produces great quantities of fruits about the size of peas; these vary in color from bright red to yellow. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, vol. 4, p. 47.*)

For previous introduction, see S. P. I. No. 27128.

49040. POPULUS ADENOPODA Maxim. Salicaceæ.

Poplar.

A rather slender, shapely tree, 25 meters or more tall, with a straight trunk and smooth pale-gray bark which on old trees becomes dark and slightly fissured. The leaves are greenish beneath. This is the common low-level poplar of Hupeh and Szechwan, China. (Adapted from *Sargent, Plantae Wilsonianae, vol. 3, p. 21.*)

49041. POPULUS MAXIMOWICZII A. Henry. Salicaceæ.

Poplar.

This poplar is a native of eastern Siberia and northern Japan. It is the largest tree of eastern Siberia, where it sometimes attains a height of 80 feet, with a broad head of massive branches. The leaves are finely toothed, pale green and lustrous above, silvery white below, and 3 or 4 inches long. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, vol. 1, p. 41.*)

For previous introduction, see S. P. I. No. 43862.

49042. PYRUS MALIFOLIA Spach. Malaceæ.

Pear.

"This may be a hybrid between *Pyrus auricularis* and some other species of *Pyrus* (*Malus*), but this has not yet been determined." (*Schneider, Illustriertes Handbuch der Laubholzkunde, vol. 2, p. 995.*)

For previous introduction, see S. P. I. No. 44048.

49043. ROSA MICRANTHA J. E. Smith. Rosaceæ.

Rose.

A rose which closely resembles *Rosa canina*; it is native to the mountains of central Europe. The leaflets are often tinged with red, and the pink flowers are borne in corymbs. The ovoid fruits are bright red. (Adapted from *Willmott, The Genus Rosa, p. 461.*)

49044. ROSA PALUSTRIS Marsh. Rosaceæ.
(*R. carolina* of Auth., not L.)

Rose.

Variety *nutalliana*. "Flowers larger and appearing later than in the species, lasting until September." (*Alfred Rehder.*)

The typical form of this species is an erect, very tall shrub, distributed through eastern North America from Canada to Florida. It has reddish stems, bright-pink single flowers which appear very late, and bright-scarlet fruit. (Adapted from *Willmott, The Genus Rosa, pt. 11, p. 211.*)

49045. ROSA sp. Rosaceæ.

Rose.

"No. 1135."

49046. ROSA sp. Rosaceæ.

Rose.

"No. 1136."

49032 to 49050—Continued.

49047. *ROSA* sp. Rosaceæ. Rose.
 "No. 1140."
 49048. *ROSA* sp. Rosaceæ. Rose.
 Variety *Catherine*.
 49049. *ROSA* sp. Rosaceæ. Rose.
 "A *Rosa multiflora* hybrid." (*Alfred Rehder*.)
 49050. *ULMUS* sp. Ulmaceæ. Elm.
 "Dwarf form."

49051 to 49123.

From Jamaica Plain, Mass. Plant material collected by Mr. H. E. Allanson in the Arnold Arboretum through the courtesy of Prof. Sargent, its director. Numbered December 31, 1919. Quoted notes by Mr. Allanson.

49051. *AESCULUS TURBINATA* Blume. Æsculaceæ.

The hardy Chinese *Aesculus*, "Tochnoki," which attains a height of 40 feet. It is valuable as a shade tree. The seeds are used for food in Japan. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 22.)

49052. *BERBERIS AMURENSIS* Rupr. Berberidaceæ. Barberry.

A very decorative ornamental with branches covered with drooping clusters of showy red fruits. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 35, Oct. 25, 1912.)

49053. *BERBERIS AMURENSIS JAPONICA* (Regal) Rehder. Berberidaceæ.
(B. sieboldii Hort., not Miquel.) Barberry.

A stout compact shrub, indigenous to Japan, 3 to 4 feet in height, with pale-gray bark and dark-green, leathery, obovate leaves which turn in autumn to brilliant shades of scarlet and orange. The racemes of greenish yellow flowers and the scarlet berries resemble those of the common barberry. (Adapted from *Garden and Forest*, vol. 3, p. 248.)

49054. *BERBERIS BRETSCHNEIDERI* Rehder. Berberidaceæ. Barberry.

An upright fast-growing shrub, 2 to 3 meters in height, found in the mountains near Peking, China. The small, pale-yellow flowers are borne in pendent racemes and are succeeded by racemes of purplish pear-shaped fruits. This shrub is hardy as far north as Massachusetts and is particularly ornamental in late autumn when the leaves change to brilliant shades of orange and scarlet. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 21, pl. 110.)

49055. *BERBERIS CANADENSIS* Mill. Berberidaceæ. Barberry.

An ornamental of great decorative value. Its showy fruits are very ornamental in the house. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 35, Nov. 7, 1912.)

49056. *BERBERIS DICTYOPHYLLA* Franch. Berberidaceæ. Barberry.

This barberry was introduced from Yunnan many years ago, but it is not common nor grown to the extent it deserves. It forms a medium-sized shrub some 4 feet or so in height and is somewhat broad in proportion. The branches are erect when young, but become semiarching with age. The ovate leaves are borne in clusters of five at each node, each leaf being about half an inch long and having a few irregular teeth on the

49051 to 49123—Continued.

edges. They are bright grass-green above and intensely glaucous beneath. This glaucescence is also present on the stems, more especially the younger ones, the blue-whiteness of the whole plant being especially striking in summer. The usual three spines found in most of the barberries are present beneath the leaves at each node, each spine being somewhat less than one inch in length and sharply pointed. The flowers are small, pale yellow in color, and are succeeded by oval berries which are red when ripe. Neither the flowers nor the fruits are very striking, the chief beauty of the plant being the peculiar glaucescence of the stems and the under sides of the leaves. It is easily propagated by seeds or by layering. (Adapted from *The Gardeners' Chronicle*, Sept. 28, 1912.)

49057. BERBERIS DIELSIANA Fedde. Berberidaceæ. **Barberry.**

A spreading loosely branched shrub, $1\frac{1}{2}$ to 3 meters (5 to 10 feet) tall, with narrowly elliptic, acute leaves which are distinctly whitish underneath, yellow flowers, and red fruits. The foliage is often bronzy. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, pt. 3, p. 441.)

49058. BERBERIS GILGIANA Fedde. Berberidaceæ. **Barberry.**

An ashy-barked ornamental shrub, native to central China. The lanceolate or obovate leaves are somewhat coriaceous and up to 4 cm. long. The flowers are borne in dense racemes. (Adapted from *Engler's Botanische Jahrbücher*, vol. 36, Beiblatt No. 82, p. 43.)

49059. BERBERIS HENRYANA C. Schneid. Berberidaceæ. **Barberry.**

This barberry represents apparently *Berberis vulgaris* in Hupeh and eastern Szechwan, but it is very different from the European species and its nearest relatives, especially in its brownish, sometimes almost purplish branches which are yellowish gray in *B. vulgaris* L. and *B. amurensis* Rupr. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, pt. 3, p. 440.)

49060. BERBERIS INTEGERRIMA Bunge. Berberidaceæ. **Barberry.**

A shrub up to 6 feet in height, with grayish green leaves, dense racemes of small flowers, and black fruits. It flowers in May. (Adapted from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 490.)

49061. BERBERIS KOREANA Palibin. Berberidaceæ. **Barberry.**

An ornamental shrub, up to 6 feet in height, with the young branches shining purplish, short simple spines, oval or obovate leaves up to $2\frac{1}{2}$ inches long, and dense lax racemes of yellow flowers. The roundish fruits are scarlet. This shrub is a native of Chosen (Korea). (Adapted from *Palibin, Conspectus Florae Koreae*, p. 22, and from *Bailey, Standard Cyclopaedia of Horticulture*, vol. 1, p. 490.)

49062. BERBERIS LUCIDA Schrad. Berberidaceæ. **Barberry.**

This barberry resembles in general habit *Berberis vulgaris*. It has oblong-elliptical spiny-toothed leaves and spreading racemes of elliptical red berries. It is said to be a native of the Iberian Peninsula. (Adapted from *Linnaea*, vol. 12, p. 363.)

49063. BERBERIS REHDERIANA C. Schneid. Berberidaceæ. **Barberry.**

This *Berberis* is supposed to be a native of Japan; it is a shrub with weak spines, oblanceolate or ovate-oblong leaves about 2 cm. in length, racemes of small yellow flowers, and yellowish red globose fruits. (Adapted from *Bulletin l'Herbier Boissier*, 2d ser. vol. 5, p. 659.)

49051 to 49123—Continued.

49064. *BERBERIS SEROTINA* Lange. Berberidaceæ. **Barberry.**

A form said by C. Schneider to be closely related to *B. sinensis* Poir.

49065. *BERBERIS THUNBERGII* MAXIMOWICZII Regel. Berberidaceæ.

Barberry.

A plant larger than the type, with arching stems, larger leaves, and larger flowers and fruits. In the autumn the color of the leaves is as beautiful as those of *B. thunbergii*. (Adapted from *Bulletin of Popular Information, Arnold Arboretum, No. 33.*)

49066 and 49067. *BERBERIS VULGARIS* L. Berberidaceæ. **Barberry.**

49066. Variety *purpurea*. 49067. European garden variety.

49068. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received as *B. ottawensis*, which has not yet been published.

49069. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received at *B. ottawensis*, which has not yet been published.

49070. *BERBERIS* sp. Berberidaceæ. **Barberry.**

Received as *B. wilsonae stapfiana*, which has not yet been published.

49071. × *CRATAEGUS CARRIEREI* Bean. Malaceæ.

“(No. 41. November 17, 1919.) Beautiful tree, leaves rich green to brown and red; large scarlet fruits.”

A hybrid hawthorn which originated in France and which is one of the most attractive members of this genus. The identity of the parents does not seem to be very clear. M. Carriers described it as a seedling of *Crataegus mexicana*; the other parent may be *C. crus-galli*. *C. punctata* is also mentioned as one of the parents. The glistening white flowers are nearly an inch in diameter, with attractive pink stamens, borne in flattish corymbs in May and June. During the autumn the orange-red fruits, three-fourths of an inch in diameter, make the tree very attractive. (Adapted from *The Garden, vol. 78, p. 64.*)

For previous introduction, see S. P. I. No. 35095.

49072. *CRATAEGUS DAWSONIANA* Sarg. Malaceæ.

“(No. 39. November 21, 1919.) Beautiful tree; large crop of pink berries.”

A small tree with spreading branches forming an irregular crown. It has dark yellow-green, oval, acuminate leaves, many-flowered corymbs, and usually orange-red, yellow-fleshed obovate fruits which are borne on long, slender, red pedicels. The tree is a native of Illinois. (Adapted from *Report of the Missouri Botanical Garden, p. 88, 1908.*)

49073. *CRATAEGUS NITIDA* (Engelm.) Sarg. Malaceæ.

“(No. 40. November 11, 1919.) Beautiful, deep-red fruit; leaves all gone.”

A tall, straight tree, about 30 feet high, common on the bottom lands of the Mississippi River in Illinois. The leaves turn to brilliant shades in autumn, and the flowers are borne in broad compound corymbs. (Adapted from *Sargent, Manual of the Trees of North America, p. 406.*)

For previous introduction, see S. P. I. No. 44388.

49074. *CRATAEGUS* sp. Malaceæ.

“(No. 42. November 21, 1919.) Much like × *Crataegus carrieri*.”

49051 to 49123—Continued.

49075. *MALUS ANGUSTIFOLIA* Michx. Malaceæ. Apple.
(*Pyrus angustifolia* Ait.)

A tree rarely 30 feet in height, with rigid branches forming a broad, open head, lanceolate-oblong leaves, very fragrant white or pink flowers borne in few-flowered clusters, and very fragrant, pale yellow-green fruits about an inch in diameter. The tree is common in the southeastern United States. (Adapted from *Sargent, Manual of the Trees of North America*, p. 352.)

49076. × *MALUS ATROSANGUINEA* C. Schneid. Malaceæ. Apple.
(*Pyrus atrosanguinea* Hort.)

A handsome floriferous species of doubtful origin. It is probably *Pyrus halliana* × *P. sieboldii*, and resembles it in general but differs in that its deep carmine flowers do not fade to white, in its rather narrower petals, and in its more shining and finally glabrous leaves. The fruit is dark red. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 5, p. 2875.)

49077. *MALUS BACCATA* (L.) Moench. Malaceæ. Siberian crab apple.
(*Pyrus baccata* L.)

The crab apple of eastern Siberia is a tall slender tree with white flowers borne on long drooping stems, and very small yellow fruits, from which the calyx falls before the fruit is ripe. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

For previous introduction, see S. P. I. No. 44283.

49078. *MALUS CORONARIA* (L.) Mill. Malaceæ. Wild crab apple.
(*Pyrus coronaria* L.)

A beautiful tree, native to the eastern United States. In May it is covered with fragrant rose-colored flowers. The fruits, about 1½ inches in diameter, are yellow-green and valued for making preserves. (Adapted from *Curtis's Botanical Magazine*, pl. 2009.)

49079. × *MALUS DAWSONIANA* Rehder. Malaceæ. Apple.

For description, see S. P. I. No. 49035.

49080. *MALUS FLORIBUNDA* Siebold. Malaceæ. Crab apple.
(*Pyrus pulcherrima* Aschers. and Graebn.)

One of the handsomest of all the crab apples, and one of the earliest to flower. It is a broad shrub with abundant dark-green foliage and a great profusion of pink flowers. The yellow or orange fruits are not much larger than peas. The origin of this plant is uncertain, although it appears to be known in China as a wild plant. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

49081. *MALUS HALLIANA* Koehne. Malaceæ. Apple.

Variety *parkmanii*. "The double-flowered form; named for Francis Parkman, the historian, in whose garden near Boston it was first grown in this country." (*L. H. Bailey*.)

49082. *MALUS MICROMALUS* Makino. Malaceæ. Apple.

This little-known species is unusually attractive with its small pink flowers. It is a tree with erect branches which form a narrow pyramidal head; the bark is pale and smooth. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 12.)

49051 to 49123—Continued.

49083. *MALUS PRUNIFOLIA* RINKI (Koidz.) Rehder. Malaceæ. Apple
(*Pyrus prunifolia rinki* Bailey.)

A very handsome tree, native to northern and western China, which produces an abundance of roundish fruits, smaller than those of the typical species and varying in color from green to yellow or red. Its handsome and abundant fruits make it well worthy of cultivation in American gardens. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 46.)

For previous introduction, see S. P. I. No. 46700.

- 49084 and 49085. *MALUS SARGENTII* Rehder. Malaceæ. Apple
(*Pyrus sargentii* Bean.)

49084. A shrub from northern Japan which grows only a few feet in height, but spreads by semiprostrate stems to a wide diameter. The scarlet fruit, which is produced in great quantities, remains in good condition on the branches until the following spring. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 47.)

For previous introduction, see S. P. I. No. 43858.

49085. "A dwarf form."

- 49086 and 49087. *MALUS SIEBOLDII* (Regel) Rehder. Malaceæ. Apple
(*Pyrus sieboldii* Regel.)

49086. For description, see S. P. I. No. 49039.

49087. Received as *Malus toringo*, which is now referred to *M. sieboldii*.

49088. *MALUS SIEBOLDII ARBORESCENS* Rehder. Malaceæ.
(*Pyrus sieboldii arborescens* Bailey.)

"A form widely distributed in Japan. It differs from the type in its more treelike habit, somewhat larger and less divided leaves, and in the color of the flowers, which are often nearly white." (L. H. Bailey.)

For previous introduction, see S. P. I. No. 43704.

49089. *MALUS SIEBOLDII CALOCARPA* Rehder. Malaceæ. Apple.

This variety of *M. sieboldii* has larger flowers and fruit and is a large arborescent shrub. As a flowering plant and when its bright-red, lustrous fruit is ripe, it is one of the handsomest of the crab apples. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 4, p. 47.)

49090. *MALUS SOULARDI* (Bailey) Britton. Malaceæ. Apple
(*Pyrus soulardi* Bailey.)

The Soulard crab, with ovate or obovate leaves with wrinkled lower surfaces and greenish yellow fruits, is found occasionally from Minnesota to eastern Texas, and is believed to be a natural hybrid between the common apple and *M. ioensis*. (Adapted from *Sargent, Manual of the Trees of North America*, p. 355.)

49091. *MALUS SPECTABILIS* (Ait.) Borkh. Malaceæ. Chinese flowering apple
(*Pyrus spectabilis* Ait.)

A tall shrub or small tree from northern China, with erect, slightly spreading branches, large pink flowers which in the cultivated forms are more or less double, and medium-sized yellow fruits. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, No. 22.)

For previous introduction, see S. P. I. No. 44281.

49051 to 49123.—Continued.

49092. *MALUS* sp. Malaceæ. Apple.

"(No. 5009.) *Fluke* apple. Fruits."

49093. *MALUS* sp. Malaceæ. Apple.

"*Kashmere*. Fruits."

49094. *MALUS* sp. Malaceæ. Apple.

"(No. 329.) *Purdom*. Fruits."

49095. *MALUS* sp. Malaceæ. Apple.

"Red-fruited crab apple bought in Chinese market."

49096. *MALUS* sp. Malaceæ. Apple.

"Apparently a hybrid between *Malus baccata* and *M. prunifolia*." (*Rehder*.)

49097. *PYRUS CALLERYANA* Decaisne. Malaceæ. Pear.

A wild Chinese pear, not uncommon in western Hupeh at altitudes of 1,000 to 1,500 meters. It is easily recognizable by its comparatively small, crenate leaves and small flowers. This pear maintains a vigorous and healthy appearance under the most trying conditions, and might prove to be a very desirable blight-resistant stock. The woolly aphid has not been known to touch this species. (Adapted from *Monthly Bulletin of the California State Commission of Horticulture*, vol. 4, p. 313.)

For previous introduction, see S. P. I. No. 47261.

49098. *PYRUS CALLERYANA GRACILIFLORA* Rehder. Malaceæ. Pear.

"This form looks at flowering time quite distinct from the plants we consider typical *Pyrus calleryana* on account of its looser and slenderer inflorescence and the smaller flowers with pink, not purple, anthers." (*Journal of the Arnold Arboretum*, July, 1920, p. 61.)

49099. *PYRUS CALLERYANA TOMENTELLA* Rehder. Malaceæ. Pear.

"This form is readily distinguished from the type by the dense white tomentum of the young growth and of the inflorescence, which on the branchlets often persists until the following year." (*Journal of the Arnold Arboretum*, July, 1920, p. 61.)

49100. *PYRUS SERRULATA* Rehder. Malaceæ. Pear.

A tree, native to western China, 22 to 26 feet in height, with oval or oval-oblong, serrulate leaves up to 4½ inches in length, racemes of white flowers, and nearly globular brown fruits about half an inch long. (Adapted from *Rehder*, *Proceedings of the American Academy of Arts and Sciences*, vol. 50, p. 234.)

For previous introduction, see S. P. I. No. 46748.

49101. *ROSA ABIETINA* Grenier. Rosaceæ. Rose.

A small, hardy, pink-flowered rose from Switzerland and the French provinces nearest that country. The bush is usually from 5 to 6 feet tall. (Adapted from *Schneider*, *Handbuch der Laubholzkunde*; pt. 1, p. 567.)

For previous introduction, see S. P. I. No. 43706.

49102. *ROSA ALBA* L. Rosaceæ. Rose.

"An upright shrub, about 6 feet high, with white, more or less double fragrant flowers and ovate scarlet fruits. Its origin is unknown; it

49051 to 49123—Continued.

may possibly be a hybrid between *Rosa gallica* and *R. dumetorum*." (Rehder.)

For previous introduction, see S. P. I. No. 30254.

49103. ROSA ALBERTI Regel. Rosaceæ.

Rose.

"Slender-branched rose from Turkestan, allied to *Rosa willmottiae*. Flowers white, 1½ inches wide." (Rehder.)

For previous introduction, see S. P. I. No. 37977.

49104. ROSA ARVENSIS Huds. Rosaceæ.

Ayrshire rose.

This is a British species readily recognized by its long, slender, trailing stems. Popularly known as the Ayrshire rose, the habit of the plant makes it very suitable for covering banks and terraces. The white single flowers, with a tuft of yellow stamens in the center, appear during June and July, and the small oval fruits are red. (Adapted from *The Garden*, vol. 18, p. 511.)

49105. ROSA BELGRADENSIS Pancic. Rosaceæ.

Rose.

"This resembles *Rosa rubiginosa* or *R. dumetorum*. It is a medium-sized shrub with rather small, slightly glandular-pubescent foliage and clustered pink flowers about 1½ inches across." (Rehder.)

49106. ROSA BLANDA Ait. Rosaceæ.

Rose.

"(No. 10. November 14, 1919.) Forms a thicketlike growth; free seeder. No thorns."

An erect shrub, 4 to 6 feet high, found generally in damp situations from Labrador throughout the northern United States. The pink flowers, which are sweet scented, are single and rather large. It is one of the earliest roses to flower. (Adapted from Willmott, *The Genus Rosa*, pt. 16, pl. 104.)

49107 and 49108. ROSA CANINA L. Rosaceæ.

Rose.

49107. "(No. 16. November 21, 1919.)" A stout shrub, 6 to 13 feet high, with scattered hooked thorns and clusters of fragrant white or pinkish flowers. The roundish fruits are bright red. This rose is found throughout most of the cooler parts of Europe and western Asia and has many varieties. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 422.)

For previous introduction, see S. P. I. No. 43709.

49108. Variety *subinermis*. "(No. 5. November 14, 1919.) Small plant, sparse seeder."

49109. ROSA CAROLINA L. Rosaceæ.

Rose.

"(No. 1. November 14, 1919.) Eastern North America. Spreading bush, about 3 or 4 feet high, very much covered with thorns. Fair quantity of small red round hips."

49110. ROSA CORIIFOLIA Fries. Rosaceæ.

Rose.

"(No. 14. November 14, 1919.) Large bush, heavily fruited."

This is a very attractive single white rose, common throughout Europe, extending to western Asia. The stems are erect or arching, and the flowers are borne singly or in clusters of two to four. The bright-red fruits ripen in September. (Adapted from Willmott, *The Genus Rosa*, pt. 20, pl. 129.)

For previous introduction, see S. P. I. No. 43713.

49051 to 49123.—Continued.

49111. *ROSA DUMETORUM* Thuill. Rosaceæ. Rose.

"(No. 21. November 21, 1919.) Beautiful deep-red hips; vigorous grower."

A tall, arching shrub, generally distributed throughout England, with stout scattered prickles, pubescent leaves, few-flowered corymbs of single pink flowers, and oblong, bright-red, early-ripening fruits. (Adapted from Willmott, *The Genus Rosa*, pt. 21, pl. 132.)

49112. *ROSA GAYIANA* Wallr. Rosaceæ. Rose.

"(No. 26. November 21, 1919.)"

A European rose closely allied to *Rosa villosa* L., from which it appears to differ chiefly by its larger, oblong-ovate leaflets. The thorns are straight, and the flowers solitary. (Adapted from Wallroth, *Rosa Plantarum Generis Historia Succincta*, p. 171.)

For previous introduction, see S. P. I. No. 43715.

49113. *ROSA HELENÆ* Rehd. and Wils. Rosaceæ. Rose.

"(No. 22. November 21, 1919.)"

A vigorous and hardy shrub with slender, arching stems, 5 or 6 feet high, with cheerful light-green foliage and many-flowered clusters of pure white, fragrant flowers $1\frac{1}{2}$ inches in diameter. It is native to western China. (Adapted from *Bulletin of Popular Information, Arnold Arboretum*, vol. 1, p. 39.)

For previous introduction, see S. P. I. No. 45729.

49114. *ROSA MONTANA* Chaix. Rosaceæ. Rose.

"(No. 7. November 14, 1919.) Small; smooth red bark; good seeder."

"Allied to *Rosa canina*. It has hooked prickles and small, pale-pink flowers." (Rehder.)

49115. *ROSA MULTIFLORA CATHAYENSIS* Rehd. and Wils. Rosaceæ. Rose.

This is a very common rose growing in sandy and rocky places besides streams everywhere in western Hupeh and in Szechwan, from river level to an altitude of 1,300 meters. The flowers are always pink and larger than those of the type, and like the type it is a very variable plant. The stems may be prostrate or erect; the leaves vary extremely in size, and the leaflets vary from narrow-lanceolate to suborbicular and are nearly glabrous or very pubescent. (Adapted from Sargent, *Plantae Wilsonianae*, vol. 2, pt. 2, p. 305.)

49116. *ROSA NUTKANA* Presl. Rosaceæ. Rose.

"(No. 7. November 14, 1919.) Vigorous; much barbed."

An erect shrub, 3 to 4 feet high, with bright-brown stems and stout scattered prickles. It is found from Alaska to northern California. The flowers are large, single, and pink and the fruits red and pulpy. (Adapted from Willmott, *The Genus Rosa*, pt. 12, pl. 75.)

For previous introduction, see S. P. I. No. 30261.

49117. *ROSA OXYODON* Boiss. Rosaceæ. Rose.

"(No. 15. November 21, 1919.) Large spring variety."

A prickly-stemmed shrub with solitary pink flowers. It is native to eastern Caucasasia. (Adapted from Boissier, *Flora Orientalis*, vol. 2, p. 647.)

For previous introduction, see S. P. I. No. 43722.

49051 to 49123—Continued.

49118 and 49119. *ROSA RUBIGINOSA* L. Rosaceæ.

Sweetbrier.

49118. "(No. 3. November 14, 1919.)" An erect, compact shrub, 3 to 5 feet high, with stout, scattered, hooked prickles and 5 to 7 small, ovate, acute, dull-green leaflets that are nearly or quite glabrous above and densely glandular (scented) and slightly hairy beneath. It bears one to four bright-pink, corymbose flowers; the fruit is dark red and does not ripen until October. The sweetbrier is wild throughout Europe; it extends to Teneriffe and Persia, and is naturalized in the eastern United States. (Adapted from Willmott, *The Genus Rosa*, pt. 23, p. 449.)

49119. "(No. 11. November 14, 1919.)"

49120. *ROSA SATURATA* Baker. Rosaceæ.

Rose.

"(No. 13. November 14, 1919.)"

A shrub, up to 8 feet in height, native to central China. The deep-red flowers are about 2 inches in diameter and are borne singly or in twos or threes. The obovoid fruits are coral red. (Adapted from Willmott, *The Genus Rosa*, pt. 25, p. 503.)

For previous introduction, see S. P. I. No. 43911.

49121. *ROSA SETIGERA* Michx. Rosaceæ.

Prairie rose.

"(No. 27. November 14, 1919.)"

A very tall rose with arching stems, small scattered prickles, and large single pink or white flowers borne in few-flowered lax corymbs. The fruits are red. The prairie rose, as this is called, is found from Florida and Texas northward to the Great Lakes. (Adapted from Willmott, *The Genus Rosa*, pt. 4, pl. 23.)

49122. *ROSA TURKESTANICA* Regel. Rosaceæ.

Rose.

"(No. 2. November 14, 1919.) Erect, tall, not many thorns. Fairly good grower; scant seeder. Oblong bright-red hips three-fourths of an inch long and three-eighths of an inch in diameter."

49123. *ROSA* sp. Rosaceæ.

Rose.

"(No. 4. November 14, 1919.)"

Received as *Rosa obtusiloba*, for which a place of publication has not been found.

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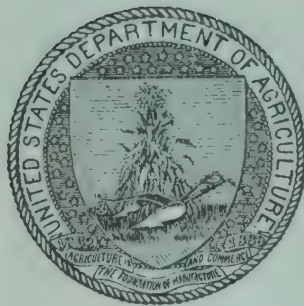
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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE
OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JANUARY 1
TO MARCH 31, 1920.

(No. 62; Nos. 49124 to 49796.)



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1923.

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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM JAN- UARY 1 TO MARCH 31, 1920 (NO. 62; NOS. 49124 TO 49796).

INTRODUCTORY STATEMENT.

During the period of three months covered by this inventory, Wilson Popenoe, Agricultural Explorer for this office, was exploring and collecting living plant material in the region of the city of Guatemala, Coban, Tucuru, Antigua, and El Barranquillo in the Republic of Guatemala, and Dr. H. L. Shantz, as Agricultural Explorer attached to the Smithsonian Expedition, was exploring and collecting in Mozambique, East Africa, Northern Rhodesia, and the Belgian Kongo. Inasmuch as both of these explorers are experienced travelers and especially familiar with American agriculture, what they collected has unusual value.

Of Mr. Popenoe's introductions described here, the following appear at this time of particular interest:

The large-fruited subtropical hawthorn (*Crataegus stipulosa*, No. 49145), which is used for jellies and preserves, reminds us of Frank N. Meyer's discovery and introduction of the large grafted Chinese haws which have grown well in this country. The pacaya palm (*Chamaedorea* sp., No. 49325) has an inflorescence which is used extensively as a salad in Guatemala. The two superior varieties of the coyó (*Persea schiedeana*, Nos. 49329 and 49330), a close relative of the avocado, represent a fruit new to horticulture and one of great value for tropical and subtropical regions; these fruits, according to Mr. Popenoe, have even a better flavor than the avocado. The three remarkable tropical blackberries (*Rubus* spp., 49331 to 49333) from Alta Vera Paz ought at least to be valuable for breeding purposes. An entirely new species of *Annona* (*A. scleroderma*, No. 49371), called the "posh," has a thick, hard-shelled fruit and ought to make a good shipper; its delicious snow-white flesh, which is more acid and sprightly than that of the sugar-apple, should make it popular. The ochoy (*Paspalum fasciculatum*, No. 49401) and the "hotz kor" (*Chaetochloa paniculifera*, No. 49372) are considered among the best pasture grasses of Guatemala and since they are adapted to moist regions should be available for trial on the Everglades; and the "kos-kún" (*Pennisetum complanatum*, No. 49763), a most important grass from Antigua, may also thrive there. Other interesting plants listed here with Mr. Popenoe's careful descriptions include an undetermined species of walnut from Alta Vera

Paz (*Juglans* sp., No. 49375); seven pasture and forage grasses from Alta Vera Paz (Nos. 49376 to 49382); *Pearsea donnell-smithii* (No. 49383), a wild species related to the avocado; two new species of scarlet sage (*Salvia* spp., Nos. 49389 and 49742), one with flowers somewhat richer in color than those of the scarlet sage in cultivation in America and the other with flowers twice as large; also a new blue-flowered species (*Salvia amarissima*, 49780) and a species of *Alpinia* (No. 49443), related to the ginger of commerce, which produces bright-red fruits used by the Kekchi Indians as an ingredient of soups and stews. *Dahlia maxonii* (No. 49757), a new species discovered by Mr. Popenoe, grows to a height of 18 feet and bears lilac-pink flowers, whereas *D. popenovii* (No. 49758) is only 4 feet high and bears crimson flowers. Doctor Safford considers the latter to be one of the wild parents of the cultivated cactus dahlias.

Doctor Shantz's introductions which should be emphasized are as follows:

Panicum madagascariense (No. 49210), a grass for the sandy soils of the South; the m'goma tree (*Ricinodendron rautanenii*, Nos. 49213 and 49214) of Southern Rhodesia, the wood of which is remarkably light; the Morula (*Sclerocarya caffra*, Nos. 49215 and 49315), a beautiful tree bearing edible fruits with oily seeds; a tropical jujube (*Ziziphus mucronata*, No. 49219) from Bulawayo; the Rhodesian teak (*Baikiaca plurijuga*, No. 49228); the Rhodesian ash (*Burkea africana*, No. 49230); the Rhodesian mahogany (*Pahudia quanzensis*, No. 49241); two wild persimmons (*Diospyros* spp., Nos. 49235 and 49236) from Victoria Falls and two from the Transvaal (Nos. 49298 and 49299); the inkulu (*Diospyros senegalensis*, No. 49586) from the Kafue River; the uteta tree (*Caesalpinia* sp., No. 49460), a legume bearing poisonous pods which the natives boil in four successive waters before they are safe to eat; the popular native fruit mahobohobo (*Uapaca sansibarica*, No. 49466), astringent when green but sweet when ripe; the impinji (*Ximenia americana*, No. 49467), a fruit resembling the American plum; and three as yet undetermined species—the m'seehe (No. 49469) having the odor of a lychee, the m'fwefee (No. 49470) with very sweet edible fruits, and the m'tantanvara (No. 49471) with fruits like the wild cherry. The Kafir orange (*Strychnos spinosa*) has fruited so well in Florida that another small-fruited species (No. 49599), with an agreeable flavor, may make the improvement of this wild fruit possible. The m'tingele (No. 49607), the maululu (*Canthium lanciflorum*, No. 49608, reported to be one of the most delicious fruits of the Victoria Falls region), and the m'pila (No. 49609) are promising wild fruits.

Fenugreek is an important forage crop in Egypt and has just fallen short of being a real success in our own South. Its relative from New South Wales (*Trigonella suarissima*, No. 49124), which Sir Thomas Mitchell recommends for use like spinach, deserves to be thoroughly tested.

Through Consul Deichman, of Valparaiso, we have received a valuable collection of Chilean trees, some of which will doubtless find a home in the region around San Francisco, where already several of these Chilean species seem quite at home. They include three of the Chilean oaks (*Nothofagus* spp., Nos. 49274 to 49276).

Vicary Gibbs has sent us bulbs of the beautiful *Nomocharis* (*N. pardanthina*, No. 49281), a lilylike plant from western China, which, Reginald Farrer says, the Chinese eat as they do onions.

Stranvaesia davidiana (No. 49287) is a valuable new shrub from western China which has behaved as an evergreen in Washington, D. C., and deserves to be used extensively in dooryards; it is attractive through the winter.

It remains to be seen whether Mr. Neipp's *Gladiolus malangensis* (No. 49369) from west Africa is of value for the breeders of this showy and popular flower.

J. B. Norton, the asparagus breeder, has seeded at Hartsville, S. C., what he considers the hardiest of the evergreen ornamental species of asparagus (*Asparagus acutifolius*, No. 49458) and recommends it for dooryard hedges. It is suggestive of a fine-leaved juniper, and since it has storage roots and drought-resistant foliage it should be valuable for dry regions.

Through the kindness of Doctor Burns, of the Bombay Department of Agriculture, 16 species of forage grasses (Nos. 49506 to 49521) have been obtained for trial by Professor Piper, particularly in the Southern States.

An entirely new cereal crop from Sierra Leone, called fundi (*Digitaria exilis*, Nos. 49522 to 49524), is sent in by Mr. Scotland, Director of Agriculture. It is reported to be adapted to light soils and to produce a grain of very good flavor suited for the use of invalids.

The massaranduba (*Mimusops huberi*, No. 49709), of Para, is related to the sapote and may succeed in southern Florida; it is a market fruit in Para. The cupú-assú (*Theobroma grandiflora*, No. 49710) from this same region, a close relative of cacao, bearing its fruits on the trunk, is one of the most important fruit trees of the State of Para. Neither of these appears to have been cultivated elsewhere in the Tropics.

The goa bean (*Botor tetragonoloba*, No. 49711) has grown well in Florida, and since its young pods make a delicious vegetable similar to snap beans it deserves study as a winter vegetable for shipping to northern markets. Its edible tubers are said to contain 24 per cent of protein.

Since the hondapara of India (*Dillenia indica*, No. 49713) has flowered at Miami it deserves further study as an ornamental and fruit tree as well.

An unusual collection of seeds (Nos. 49613 to 49661) has been sent in by Mr. Cave, curator of the Lloyd Botanic Garden at Darjiling. It includes *Berberis angulosa* (No. 49616) with berries nearly an inch long; a Himalayan birch (*Betula utilis*, No. 49620) from Kashmir; a Chinese hazelnut (*Corylus ferox*, No. 49626), 20 feet tall; the blady grass (*Imperata cylindrica*, No. 49637), which produces a paper pulp almost equal to that of esparto; the giant lily (*Lilium*

giganteum, No. 49641), growing to 9 feet in height; *Michelia excelsa* (No. 49642) and *M. lanuginosa* (No. 49643), two beautiful trees; *Piptanthus nepalensis* (No. 49645), a hardy evergreen climber with large racemes of yellow flowers; a wild cherry tree (*Prunus cerasoides*, No. 49647) with cymes of rose-red flowers; and a species of currant (*Ribes griffithii*, No. 49651) with fruit clusters 9 inches long.

The botanical determinations of seeds introduced have been made and the nomenclature revised by H. C. Skeels; and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander and Miss Patty T. Newbold.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 18, 1921.

INVENTORY.¹

49124. TRIGONILLA SUAVISSIMA Lindl. Fabaceæ.

From Sydney, New South Wales. Seeds presented by J. H. Maiden, director, Botanic Gardens, through A. J. Pieters, of the Bureau of Plant Industry. Received January 9, 1920.

This cloverlike plant, called "Darling clover" in Australia, where it is native, has fragrant stems and foliage and in favorable locations is perennial, becoming 3 feet or more in height. When grown on rich black soils subject to periodic inundations it produces a large quantity of nutritious herbage, of which stock are particularly fond and on which they fatten. It provides good feed in late winter and early spring, hence it is a valuable addition to pastures. Sir Thomas Mitchell wrote of this plant, which he called "Australian shamrock," "The perfume of this herb, its freshness and flavor, induced me to try it as a vegetable, and we found it delicious and tender as spinach." The perfume is due to the presence of coumarin. If cut when in flower and properly cured it makes good hay. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1909, p. 12.)

49125 to 49137.

From Rochester, N. Y. Cuttings presented by John Dunbar, assistant superintendent of parks. Received January 3, 1920.

49125. BERBERIS DUROBRIVENSIS C. Schneid. Berberidaceæ. Barberry.

"*Berberis durobrivensis* is a supposed hybrid between *B. poireti* and some unknown species which was raised at Rochester, therefore its specific name." (Alfred Rehder.)

49126. BERBERIS EMARGINATA Willd. Berberidaceæ. Barberry.

A Siberian *Berberis* which becomes 3 or 4 feet in height. The leaves are narrowly obovate, and the yellow flowers appear in May. The slender red fruits mature in September and October. (Adapted from *Guimpel, Otto, and Hayne, Abbildungen der fremden Holzarten*, vol. 1, p. 78, pl. 62.)

49127. BERBERIS OBLONGA (Regel) C. Schneid. Berberidaceæ. Barberry.

"Allied to *Berberis heteropoda*, but has angular branches, obovate leaves, and 10 to 20 flowered racemes, followed by oblong fruits. The plant is a native of Turkestan." (Alfred Rehder.)

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories in many cases undoubtedly will be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

49125 to 49137—Continued.

49128. *BERBERIS POIRETI* C. Schneid. Berberidaceæ. Barberry.

A hardy and handsome shrub, native to northern China, with slender, arching branches and simple spines. It reaches 5 feet in height. The leaves are quite narrow, with green lower surfaces, and the ovoid or oblong fruits are a deep blood red. (Adapted from *Bailey, Standard Cyclopædia of Horticulture*, vol. 1, p. 490.)

49129. *BERBERIS VERRUCULOSA* Hemsl. and Wils. Berberidaceæ. Barberry.

This attractive Chinese *Berberis* is found as an evergreen shrub in western Szechwan, where it becomes 3 or 4 feet in height. The yellow flowers and ovoid purplish blue fruits are borne among the small, very spiny leaves. (Adapted from *Curtis's Botanical Magazine*, pl. 8454.)

49130. *BERBERIS VULGARIS* L. Berberidaceæ. Barberry.

Variety *lutea*.

"Mr. Dunbar showed me *Berberis vulgaris* var. *lutea*, a garden hybrid. It is a small, pale, slender-fruited form, not a particularly free fruiter but would carry its seedlessness, I believe." (*David Fairchild, Report of Western Trip, 1919, p. 16.*)

49131. *EVODIA DANIELLII* (Benn.) Hems. Rutaceæ.
(*Xanthoxylum daniellii* Benn.)

A moderate-sized bushy tree, 10 to 20 feet high, with unequally pinnate leaves up to 3 inches in length. The flowers appear in June and July in numerous corymbose panicles. The fruit consists of a number of oblong or elongated capsules which have a peculiar aromatic odor and a pungent bitter flavor. The Chinese are said to use parts of this fruit as a condiment. (Adapted from *Bennett, Annals and Magazine of Natural History*, 3d ser., vol. 10, p. 198.)

49132. *HAMAMELIS MOLLIS* Oliver. Hamamelidaceæ.

A large bush or small tree, sometimes 30 feet high, native to western China. The roundish short-stemmed toothed leaves are 4 to 5 inches long, and the golden-yellow flowers are borne in nearly sessile heads. (Adapted from *Curtis's Botanical Magazine*, pl. 7884.)

49133 and 49134. *HIBISCUS SYRIACUS* L. Malvaceæ. Rose of Sharon.

49133. White and red.

49134. Variety *caeruleus*.

49135. *MALUS FLORIBUNDA* Siebold. Malaceæ. Apple.
(*Pyrus floribunda* Kirchn.)

"The best known of the eastern Asiatic crabs is *Malus floribunda*. This is one of the handsomest and most satisfactory of all flowering trees for this climate. It blooms every year without fail, and as it reaches maturity it assumes a picturesque habit. The bright pink flower buds are very beautiful and the masses of small flowers which completely cover the branches are at first pink and gradually become white." (*Bulletin of Popular Information, Arnold Arboretum, No. 3.*)

49136. *PARROTIA PERSICA* (DC.) Meyer. Hamamelidaceæ.

A small tree, 10 to 15 feet high, found native in Persia and Transcaucasia. The alternate coarsely toothed leaves become brilliantly colored in autumn, and the heads of small flowers are conspicuous for their scarlet anthers. The wood of this tree is exceedingly hard and durable. (Adapted from *Curtis's Botanical Magazine*, pl. 5744.)

49125 to 49137—Continued.

49137. TAMARIX HISPIDA Willd. Tamaricaceæ. Tamarisk.

A very ornamental shrub of graceful habit, not more than 4½ feet high, with very finely divided leaves and beautiful racemes of minute pink flowers, which appear in September. (Adapted from *Revue Horticole*, vol. 66, p. 352, pl. 1894.)

49138 to 49144.

From Shansi, China. Presented by Prof. Joseph Bailie, Berkeley, Calif. Received January 3, 1920.

49138. AVENA NUDA Hoejer. Poaceæ. Naked oats.

"Huskless oats from Shansi Province." (Bailie.)

49139. CHAETOCHELOA ITALICA (L.) Scribn. Poaceæ. Millet.
(*Setaria italica* Beauv.)

A variety with straw-colored seeds.

49140. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"Kaoliang seed from Shansi Province."

49141. LINUM USITATISSIMUM L. Linaceæ. Flax.

"Hu ma tze from Taichow." (Bailie.)

49142. PINUS BUNGEANA Zucc. Pinaceæ. White-barked pine.

Seeds of one of the most strikingly beautiful of the oriental conifers.

For previous introduction and description, see S. P. I. No. 42730.

49143 and 49144. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

49143. Tubers from an unnamed variety.

49144. Seed from an unnamed variety.

49145 to 49148.

From the city of Guatemala, Guatemala. Seeds collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received January 5, 1920. Quoted notes by Mr. Popenoe.

49145. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 232a.) The manzanilla is a large shrub or small tree, native to Guatemala, attaining a height of about 20 feet. In the spring it produces white flowers resembling apple blossoms, and in the fall the yellow applelike fruits, about 1½ inches in diameter, are gathered and eaten in various ways, principally stewed and in the form of jelly."

For previous introduction, see S. P. I. No. 45575.

49146. PASSIFLORA LIGULARIS Juss. Passifloraceæ. Sweet granadilla.

"(No. 233a.) The sweet granadilla is grown in the highlands of Guatemala and produces fruit the size of a hen's egg, with a thick, brittle shell inclosing a white gelatinous pulp with a delicate aromatic flavor."

For previous introduction, see S. P. I. No. 43437.

49147. RUBUS TUERCKHEIMII Rydb. Rosaceæ. Mora.

"(No. 234a.) A wild Rubus common in the vicinity of San Lucas, Guatemala, at an altitude of nearly 7,000 feet. In habit and fruit this plant resembles the blackberry; the berry is, however, lighter in color,

49145 to 49148—Continued.

with a rather acid flavor. The fruit is used for preserves and for stewing."

For previous introduction, see S. P. I. No. 43438.

49148. *SPONDIAS PURPUREA* L. Anacardiaceæ.

Red mombin.

"(No. 235a.) A small stiff or sometimes spreading tropical American tree up to 25 feet in height, with compound leaves up to 6 inches long and purplish maroon flowers in few-flowered racemes. The oblong-ovoid fruit is commonly purplish and about an inch in length."

49149 to 49160.

From Victoria Falls, Rhodesia. A collection of seeds presented by C. Starke & Co., Mowbray, Cape Town, through Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 6, 1920. Quoted notes by Doctor Shantz.

49149. *CHAETOCHELOA ITALICA* (L.) Scribn. Poaceæ.

Millet.

(*Setaria italica* Beauv.)

"(No. 284.) Boer manna."

49150 to 49152. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"Three varieties."

49150. "(No. 288.) Starke's Mammoth White Kafir melon."

49151. "(No. 290.) 'Tsama melon.'"

49152. "(No. 291.) 'Monketaan melon.'"

49153. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

"(No. 289.) Fraserdale Improved Boer pumpkin."

49154. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ.

Barley.

"(No. 287.) Cape 6-rowed barley."

49155. *HORDEUM VULGARE TRIFURCATUM* (Schlecht.) Beaven. Poaceæ.

Barley.

"(No. 286.) Nepal or beardless barley-wheat."

49156. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

"(No. 282.) Recleaned Cape lucern."

49157. *MELILOTUS INDICA* (L.) All. Fabaceæ.

Yellow sweet clover.

"(No. 281.) Cape Stink Klaver."

49158. *PHALARIS MINOR* Retz. Poaceæ.

Grass.

"(No. 283.) Cape Canary seed."

An annual grass, native to the Mediterranean countries, but introduced into many parts of the world. It is erect or ascending with tufted culms up to 3 feet in height and linear leaves from 2 to 6 inches long. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 7, p. 682.*)

49159. *PHASEOLUS AUREUS* Roxb. Fabaceæ.

Mung bean.

"(No. 280.) Green Moonghi."

49160. *SECALE CEREALE* L. Poaceæ.

Rye.

"(No. 285.) Cape Early rye."

49161. FAGOPYRUM VULGARE Hill. Polygonaceæ. Buckwheat.
(*F. esculentum* Moench.)

From Brisbane, Queensland. Presented by H. C. Quodling, director, Department of Agriculture. Received January 6, 1920.

"*Sarrasin*. Although we received the original sample under the name of 'Sarragin' buckwheat, I am of the opinion that 'Sarrasin' is the correct name." (Quodling.)

49162 to 49173.

From Victoria Falls, Southern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 8, 1920. Quoted notes by Doctor Shantz.

49162. BAUHINIA sp. Cæsalpiniaceæ.

"(No. 262. Victoria Falls. November 16, 1919.) A large tree with a large, dry, almost solid pod."

49163. LUFFA CYLINDRICA (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

"(No. 273a. Victoria Falls. November 17, 1919.) A Luffa growing in the garden at the hotel; may be a native form; it forms a large fibrous pepo about 6 or 7 inches long."

49164. MARKHAMIA sp. Bignoniaceæ.

"(No. 265. Victoria Falls. November 17, 1919.) A small tree with long pods bearing winged seeds."

49165. OPLISMENUS AFRICANUS CAPENSIS (Hochst.) Stapf. Poaceæ.

Grass.

"(No. 273. Victoria Falls. November 17, 1919.) A grass from a palm grove; it looks to be good forage, especially for partially shaded areas of the South."

49166. THUNBERGIA sp. Acanthaceæ.

"(No. 274. Victoria Falls. November 17, 1919.) A shrub or woody vine with fragrant white flowers and black fruits."

49167. XIMENIA AMERICANA L. Olacaceæ. False sandalwood.

"(No. 248. Victoria Falls. November 13, 1919.) *Impinji*. A small plum with reddish yellow or orange skin which is bitter and unpleasant, but the flavor much like a good cherry, not sour and not sweet. Grows on a small tree and fruits abundantly. Should be useful for jam and jelly; also as a flavor for drinks."

49168. HELIANTHUS ARGOPHYLLUS Torr. and Gray. Asteraceæ.

Sunflower.

"(No. 247. Beira, Mozambique. November 3, 1919.) A silver-leaved sunflower grown as an ornamental at Beira and at Lourenco Marques."

49169. GARCINIA LIVINGSTONEI T. Anders. Clusiaceæ.

"(No. 263a. Victoria Falls. November 17, 1919.) *Munkononga*. An evergreen tree with heavy branches; loaded with fruit on the larger small branches. Fruit orange color, of very pleasant flavor and eagerly devoured by natives and apes."

49170. TOUNATEA MADAGASCARIENSIS (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

"(No. 263. Victoria Falls. November 15, 1919.) A medium-sized tree with long, narrow, sugar-bearing pods."

49162 to 49173—Continued.

49171. (Undetermined.)

"(No. 266. Victoria Falls, November 17, 1919.) A 'wait-a-bit' wood vine with large pods 3 to 4 inches long."

49172. (Undetermined.)

"(No. 270. Victoria Falls. November 17, 1919.) A small tree with yellow flowers and beadlike fruits."

49173. *URGINEA ALTISSIMA* (L. f.) Baker. Liliaceæ.

"(No. 271. Victoria Falls. November 17, 1919.) A large bulb with tall spikes of greenish white flowers about 3 feet high; abundant."

49174. *RUBUS* sp. Rosaceæ.

Raspberry

From Porto Rico. Plants presented by E. E. Barker, plant breeder, Insular Experiment Station, Rio Piedras. Received January 8, 1920.

"On a recent trip into a mountainous part of the island in the district of Aibonito, I found the native raspberry, called 'fresa,' growing luxuriantly. The plants grow a meter or more in height and were in dense patches. They were in flower and beginning to fruit. The fruit is large and brilliant red in color; the flavor is not remarkable." (Baker.)

49175. *SCHIZOSTACHYUM* sp. Poaceæ.

Bamboo

From Benkulen, Sumatra. Seeds presented by H. Wigman, Buitenzorg Java, through F. E. Lloyd, McGill University, Montreal, Canada. Received January 8, 1920.

Bamboos of this genus, according to Munro, "are very closely allied to *Melocanna*." G. F. Richmond, in the Philippine Journal of Science, Sect. A, vol. 5, p. 233, gives results of an experimental cutting of *Schizostachyum mucronatum* for pulp. Approximately one-quarter of an acre produced about 4 tons of air-dry material free of nodes. "This weight will produce approximately 2 short tons (1,812 kg.) of pulp."

49176 to 49196. *CORYLUS* spp. Betulaceæ.

Filbert

From St. Jean-le-Blanc, Orleans, France. Plants and cuttings presented by Edmond Versin. Received January 9, 1920.

49176 to 49193. *CORYLUS AVELLANA* L.

49176. No. 1.	<i>Du Béarn.</i>	49185. No. 12.	<i>Fertile de Coutard</i>
49177. No. 2.	<i>Fertile.</i>	49186. No. 13.	<i>Cob.</i>
49178. No. 3.	<i>D'Alger.</i>	49187. No. 14.	<i>Daviana.</i>
49179. No. 4.	<i>De Beynes.</i>	49188. No. 15.	<i>D'Angleterre.</i>
49180. No. 6.	<i>De Nottingham.</i>	49189. No. 17.	<i>Large fruited.</i>
49181. No. 7.	<i>De Brunswick.</i>	49190. No. 18.	<i>Golden leaves.</i>
49182. No. 9.	<i>Cosford a coque</i>	49191. No. 19.	<i>Des Anglais.</i>
	<i>tendre.</i>	49192. No. 20.	<i>Atlas.</i>
49183. No. 10.	<i>Bergeri.</i>	49193. No. 21.	<i>Emperor.</i>
49184. No. 11.	<i>Fructu albo.</i>		

49194. *CORYLUS COLUMNA* L.

Turkish hazel

No. 16. The nuts of this species are small and somewhat flattened with the roundish involucre several times longer than the nut. The tree reaches a height of 70 feet, with broad shining leaves. (Adapted from *Goeschke, Die Hazelnuss, p. 41.*)

49176 to 49196—Continued.

49195 and 49196. *CORYLUS MAXIMA* Mill.

This is quite similar to the common filbert, *Corylus avellana*, but is more luxuriant, with the husk narrowed above the nut and forming an elongated beak. (Adapted from *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 1, p. 148.)

49195. No. 5. *De Piémont.* 49196. No. 8. *De Provence.*

49197 to 49221.

From Victoria Falls, Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 12, 1920. Quoted notes by Doctor Shantz.

49197. *ACACIA* sp. Mimosaceæ.

"(No. 224. Bulawayo, Southern Rhodesia. November 5, 1919.) A small tree which flowers and bears a heavy crop of beans."

49198. *ACACIA* sp. Mimosaceæ.

"(No. 227. Bulawayo, Southern Rhodesia. November 5, 1919.) A large handsome tree with very rough bark and recurved spines. It grows to a height of 30 feet and has fine foliage and probably very hard wood."

49199. *ANNONA RETICULATA* L. Annonaceæ. Custard-apple.

"(No. 214. Lourenco Marques, Mozambique. October 29, 1919.) Seed from a large custard-apple served on a boat out of Lourenco Marques."

49200. *CAESALPINIA SEPIARIA* Roxb. Cæsalpiniaceæ.

"(No. 220. Salisbury, Southern Rhodesia. November 4, 1919.) A 'wait-a-bit' of almost running habit of growth. Forms a hedge which is practically impenetrable because of the short recurved spines. The foliage and flowers are attractive."

49201. *CAJAN INDICUM* Spreng. Fabaceæ. Pigeon-pea.

"(No. 241. Bulawayo, Southern Rhodesia. November 6, 1919.) Dhal bean."

49202 and 49203. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

49202. "(No. 235. Bulawayo, Southern Rhodesia. November 5, 1919.) *Majoda*. A large dark Kafir melon."

49203. "(No. 234. Bulawayo, Southern Rhodesia. November 5, 1919.) *Majoda*. The ordinary melon."

49204. *COMBRETUM APICULATUM* Sond. Combretaceæ.

"(No. 223. Bulawayo, Southern Rhodesia. November 5, 1919.) A small tree which grows on dry land; should be tried in the South and Southwest."

49205 and 49206. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ.

Pumpkin.

49205. "(No. 237. Bulawayo, Southern Rhodesia. November 5, 1919.) *Ironbark*."

49206. "(No. 233a. Bulawayo, Southern Rhodesia. November 5, 1919.) *Macleay River*."

49207. *CUCURBITA PEPO* L. Cucurbitaceæ.

"(No. 233b. Bulawayo, Southern Rhodesia. November 5, 1919.) *Macleay River*."

49197 to 49221—Continued.

49208. *Gossypium hirsutum* L. Malvaceæ.

Cotton.

“(No. 213. Beira, Mozambique. November 3, 1919.) *Nyasaland upland*. Grown at Shimba on the Zambezi. The seed is distributed to the natives and the cotton is bought from them by the Mozambique Company.”

49209. *Holcus sorghum sudanensis* (Piper) Hitchc. Poaceæ.

Sudan grass.

“(No. 236. Bulawayo, Southern Rhodesia. November 5, 1919.)”

49210. *Panicum madagascariense* Spreng. Poaceæ.

Grass.

“(No. 218. Beira, Mozambique. November 3, 1919.) A fine grass; grows well on sandy land of the Beira region. It may prove valuable on sandy soils of the South. Grows to a height of about 15 inches.”

49211. *Passiflora edulis* Sims. Passifloraceæ.

Granadilla.

“(No. 230. Bulawayo, Southern Rhodesia. November 5, 1919.) Seed from a granadilla served at a hotel. Fruit about 1½ by 2 inches, of an agreeable flavor.”

49212. *Phaseolus aureus* Roxb. Fabaceæ.

Mung bean

“(No. 232. Bulawayo, Southern Rhodesia. November 5, 1919.) A small green bean.”

49213 and 49214. *Ricinodendron rautanenii* Schinz. Euphorbiaceæ.

49213. “(No. 229. Bulawayo, Southern Rhodesia. November 5, 1919.) The *m'goma* tree, which produces a remarkably lightweight wood used instead of pith; it is also used as a base to be covered with metal or leather. The seeds should be sawed open for planting; otherwise germination will be very slow.”

49214. “(No. 249. Victoria Falls. November 13, 1919). *M'goma*. A fine tree bearing nuts with very hard shells, but with edible kernels which are also valuable for oil. I think it will prove a valuable introduction; piles of nuts were seen near the houses of the natives of this section.”

49215. *Sclerocarya caffra* Sond. Anacardiaceæ.

Morula.

“(No. 225. Bulawayo, Southern Rhodesia. November 5, 1919.) See No. 139 [S. P. I. No. 48823] and No. 193 [S. P. I. No. 49315]. The nuts are exceedingly good.”

Morula nuts, the seeds of *Sclerocarya caffra*, are found in northern Transvaal. They weigh from 3 to 4 grams and measure one-half by 1 inch. They consist of 87.9 per cent of very hard shell and 12.01 per cent of kernel, which has a pleasant nutty flavor and should be very nutritious as a food. Upon ether extraction, these kernels yield from 5 to 6.3 per cent of a pale-yellow oil, which has been analyzed as follows:

Specific gravity at 15.5° C.-----	0.9153
Acid value (as oleic)-----	1.59
Saponification number-----	19.1
Unsaponifiable matter-----per cent--	.93
Wijs' iodine number-----	72.9
Glycerol-----per cent--	10.6
Hehner number-----	94.7

49197 to 49221—Continued.

The fatty acids probably consist of:

Stearic and palmitic acids-----per cent-- 9.0

Oleic and linoleic acids-----do----- 91.0

Linolic acid is absent.

(Adapted from *The Year Book of the American Pharmaceutical Association*, vol. 6, p. 211.)

49216. TETRAPLEURA sp. Mimosaceæ.

"(No. 228. Beira, Mozambique. November 3, 1919.)" A tall unarmed tree with small flowers in spiciform racemes, allied to *Prosopis*. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 330.)

49217. TRICHOLAENA ROSEA Nees. Poaceæ.

Natal grass.

"(No. 219. Beira, Mozambique. November 3, 1919.) A most promising red-panicked grass [same as No. 187, S. P. I. No. 49317]. Grows everywhere from Nelspruit, Transvaal, to Salisbury, Rhodesia, and also in Mozambique. It seeds readily and seems to be early in maturing; not cultivated in Africa."

49218. STIZOLOBIUM DEERINGIANUM Bort. Fabaceæ. Florida velvet bean.

"(No. 231. Bulawayo, Southern Rhodesia. November 5, 1919.) Velvet beans for cattle."

49219. ZIZIPHUS MUCRONATA Willd. Rhamnaceæ.

"(No. 221. Bulawayo, Southern Rhodesia. November 5, 1919.) A small, pretty tree which fruits abundantly."

For previous introduction, see S. P. I. No. 48261.

49220. ZIZIPHUS sp. Rhamnaceæ.

"(No. 222. Bulawayo, Southern Rhodesia. November 5, 1919.) A tree much later in coming into leaf and with fruits somewhat larger than those of No. 221 [S. P. I. No. 49219]."

49221. (Undetermined.)

"(No. 226. Bulawayo, Southern Rhodesia. November 5, 1919.) A low spreading tree with black fruit."

49222. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. Poaceæ.

(*P. nigra* Munro.)

Bamboo

From Niles, Calif. Plants purchased from the California Nursery Co. Received January 13, 1920.

One of the most elegant of bamboos, with characteristic black stems 10 to 20 feet in height and plumelike masses of dark-green leaves. It is a native of China and Japan and is quite hardy in regions of mild winters. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 152.)

49223. SOPHORA TETRAPTERA J. Miller. Fabaceæ.

(*Edwardsia tetraptera* Poir.)

From Temuco, Chile. Seeds presented by Dr. E. W. D. Holway. Received January 13, 1920.

"These seeds were given me by a German priest, who says it is a most valuable tree on account of the extreme hardness of the wood--'hard enough for nails,' as he put it." (*Holway*.)

An exceedingly handsome large shrub or small tree, native to New Zealand. The flowers, which are borne in large clusters in spring, are deep yellow; the prominent calyx is of a bronze-gold hue. The pinnate leaves, of a somewhat silky texture, are very pleasing in appearance. (Adapted from *Gardening Illustrated*, vol. 29, p. 185.)

49224 to 49255.

From Victoria Falls, Southern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 14, 1920. Quoted notes by Doctor Shantz.

49224. *ACACIA* sp. Mimosaceæ.

"(No. 276. Victoria Falls. November 17, 1919.) A fine large acacia with large pods like a Robinia; seeds usually eaten by weevils. Grows near watercourses and is one of the most attractive acacias of this section."

49225. *ACACIA* sp. Mimosaceæ.

"(No. 277. Victoria Falls. November 17, 1919.) A large acacia similar to No. 276 [S. P. I. No. 49224], but a 'wait-a-bit' with thin pods and smaller seeds. Very gummy when cut and bark very red."

49226. *ADANSONIA DIGITATA* L. Bombacaceæ.

"(No. 254. Victoria Falls. November 13, 1919.) Seed from a tree about 20 feet in diameter and about 40 feet high. Flowers about 4 inches in diameter; fruit a woolly gourd 6 inches long. The pulp of the fruit is used to make a drink."

49227. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

"(No. 240. Bulawayo, Southern Rhodesia. November 6, 1919.) A cluster peanut from British East Africa."

49228. *BAIKIAEA PLURIJUGA* Harms. Cæsalpiniaceæ. Rhodesian teak.

"(No. 255. Victoria Falls. November 13, 1919.) A fine large tree; the best timber tree of the country, but the wood is hard to work."

49229. *BRACHYSTEGIA RANDII* Baker f. Cæsalpiniaceæ.

"(No. 252. Victoria Falls. November 13, 1919.) A beautiful tree 20 to 30 feet high. The wood is comparatively soft and not termite proof. The bark yields an excellent fiber and is used by the natives in building their huts."

49230. *BURKEA AFRICANA* Hook. Cæsalpiniaceæ.

Rhodesian ash.

"(No. 253. Victoria Falls. November 13, 1919.) One of the most common plants of the dry African forests; known as 'Rhodesian ash'; does best in sandy soil. Has tough, coarse-grained wood; the seeds are said to be used as food in times of famine."

49231. *CANAVALI ENSIFORME* (L.) DC. Fabaceæ.

Jack bean.

"(No. 246. Bulawayo, Southern Rhodesia. November 6, 1919.) A native bean with a pod 12 to 18 inches long. Not edible."

49232. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"(No. 242. Bulawayo, Southern Rhodesia. November 6, 1919.) 'Man Rataan,' a Kafir melon."

49233. *COPAIVA COLEOSPERMA* (Benth.) Kuntze. Cæsalpiniaceæ.
(*Copaifera colcosperma* Benth.)

"(No. 260. Victoria Falls. November 15, 1919.) A fine tree, which produces heavy crops of 1-seeded pods. The papery outer cover of the bean is very red."

49224 to 49255—Continued.

49234. *CUCURBITA PEPO* L. Cucurbitaceæ. Pumpkin.
 "(No. 245. Bulawayo, Southern Rhodesia. November 6, 1919.) Natal. Mixed cattle pumpkins."
49235. *DIOSPYROS* sp. Diospyraceæ. Persimmon.
 "(No. 272. Victoria Falls. November 17, 1919.) A tree covered with fruit from 1 to 1½ inches in diameter; brown hairs on the surface."
49236. *DIOSPYROS* sp. Diospyraceæ. Persimmon.
 "(No. 278. Victoria Falls. November 17, 1919.) A small tree the fruit of which is eaten by birds. The fruit appears to be black."
49237. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
 (*Sorghum vulgare* Pers.)
 "(No. 243. Bulawayo, Southern Rhodesia. November 6, 1919.) Kafir corn."
49238. *IPOMOEA* sp. Convolvulaceæ. Morning-glory.
 "(No. 250. Victoria Falls. November 13, 1919.) A more or less woody perennial vine with clustered light or purplish flowers; would be suitable as a porch or arbor vine."
49239. *MIMUSOPS ZEYHERI* Sond. Sapotaceæ.
 "(No. 264. Victoria Falls. November 17, 1919.) A fruit tree. The fruits are eaten by the natives and also by apes."
49240. *OCHNA PULCHRA* Hook. Ochnaceæ.
 "(No. 257. Victoria Falls. November 15, 1919.) A beautiful tree 10 to 30 feet high, which produces a quantity of beautiful racemes of yellow flowers and fruit."
49241. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.
 (*Afzelia quanzensis* Welw.) Mahogany bean.
 "(No. 258. Victoria Falls. November 16, 1919.) A fine large tree; beautiful for shade and the beans highly prized as ornaments. The wood is very beautiful; usually called 'Rhodesian mahogany' or 'pod mahogany.' The tree becomes from 2 to 7 feet in diameter, the latter size exceptional."
49242. *PENNISSETUM GLAUCUM* (L.) R. Br. Poaceæ. Pearl millet.
 (*P. typhoideum* Pers.)
 "(No. 238. Bulawayo, Southern Rhodesia. November 6, 1919.) Nyanti."
49243. *PSEUDOLACHNOSTYLIS* sp. Euphorbiaceæ.
 "(No. 256. Victoria Falls. November 15, 1919.) A peculiar shrub or small tree. It has fruits with a sweetish sticky outer cover and a peculiar method of dehiscence."
49244. *PTEROCARPUS* sp. Fabaceæ.
 "(No. 269. Victoria Falls. November 17, 1919.) A small tree."
49245. *TERMINALIA* sp. Combretaceæ.
 "(No. 267. Victoria Falls. November 17, 1919.) Mongolas. A large tree with tough wood and bark."
49246. *TETRAPLEURA* sp. Mimosaceæ.
 "(No. 275. Victoria Falls. November 17, 1919.) A beautiful tree producing large pods. The tree is useful in many ways."

49224 to 49255—Continued.

49247. *TETRAPLEURA* sp. Mimosaceæ.

(Victoria Falls. November 17, 1919. Pod containing seed; no label.)

49248. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

"(No. 239. Bulawayo, Southern Rhodesia. November 6, 1919.)
Indumba Kafir bean."

49249. *VOANDZEIA SUBTERRANEA* (L.) Thouars. Fabaceæ.

"(No. 244. Bulawayo, Southern Rhodesia. November 6, 1919.)
Inshluba. Kafir beans."

49250. *XIMENIA AMERICANA* L. Olacaceæ.

False sandalwood.

"(No. 279. Victoria Falls. November 14, 1919.) *Impinji*. A plum-
like fruit similar to No. 248 [S. P. I. No. 49167], but larger and later;
strong wild-cherry odor."

49251. (Undetermined.)

"(No. 259. Victoria Falls. November 15, 1919.) A small tree with
a strong odor of pepper when the leaves, stem, or fruits are crushed."

49252. *TOUNATEA MADAGASCARIENSIS* (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

"(No. P. 263. Victoria Falls. November 15, 1919.) A medium-sized
tree with long, narrow sugar-bearing pods."

49253. *HIPPOCRATEA OBTUSIFOLIA* Roxb. Hippocrateaceæ.

"(No. 261. Victoria Falls. November 15, 1919.) A peculiar woody
vine with clusters of fruits attached by the end of the wing, with the
heavy or seed end hanging free."

49254. *LEIOPTYX CONGOENSIS* Pierre. Meliaceæ.

"(No. 268. Victoria Falls. November 17, 1919.) A large tree with
large pods bearing large winged seeds."

49255. (Undetermined.)

"(No. 251. Victoria Falls. November 13, 1919.) A large acacialike
tree with large flat pods."

49256. *BUPHANE DISTICHA* (L. f.) Herbert. Amaryllidaceæ.

Fire-lily.

From Victoria Falls, Rhodesia. Bulbs collected by Dr. H. L. Shantz, Agri-
cultural Explorer for the Bureau of Plant Industry. Received January
14, 1920.

"(No. 292. Victoria Falls. November 17, 1919.) The fire-lily or poison-lily;
a flame of fire without leaves. Very characteristic." (Shantz.)

For an illustration of this plant as it grows in Northern Rhodesia, see Plate I.

49257. *EXOGONIUM PURGA* (Wender.) Benth. Convolvulaceæ.(*Ipomoea purga* Hayne.)

From Bahia, Brazil. Roots presented by H. M. Curran. Received January
14, 1920.

"I am sending a sample of *batata de purga*. It is a strong-growing *Ipomoea*-
like vine, with ornamental white flowers about 3 inches across the corolla. The
vine is smooth, quadrangular, with ribbonlike wings at the angles, as in *Passi-
flora quadrangularis*. The ends of the twigs and the calyx are pale yellowish
green. This plant is common in the second-growth forests and abandoned



THE FIRE-LILY OF VICTORIA FALLS. (*BUPHANE DISTICHA* (L. F.) HERBERT,
S. P. I. No. 49256.)

This plant is one of the most brilliant in the amaryllis family, a group of noteworthy ornamentals. The effect of the huge clusters is like that of so many splashes of flame. In moister air, where the mist from the Falls keeps the plants continually wet, the leaves and flowers appear at the same time; but away from the Falls, where the moisture is considerably reduced, the flowers precede the foliage. (Photographed by Dr. H. L. Shantz, Victoria Falls, Southern Rhodesia, November 1, 1919; P36710FS.)



THE M'BULU, AN EAST AFRICAN SHRUB ALLIED TO THE MOCK ORANGE. (CARDIOGYNE AFRICANA BUREAU, S. P. I. No. 49319.)

This shrub is peculiar to Mozambique. It is usually found as a climber, but often forms a large bush. The fruits, about an inch across and of reddish yellow color, are said to be edible when fully ripe. The bush is very ornamental when in fruit. (Photographed by Dr. H. L. Shantz, Delgoa Bay, Mozambique, October 25, 1919; P36544FS.)

pasture lands from the coast to 50 or 100 miles inland and is found in all the small shops of the coast towns as a common remedy." (*Curran.*)

49258 to 49260.

From Medellin, Antioquia, Colombia. Seeds presented by W. O. Wolcott. Received January 15, 1920.

49258. *ANNONA MURICATA* L. Annonaceæ. Soursop.

"The soursop, known in Spanish-speaking countries as guanábana, is unexcelled for sherbets and refreshing drinks. The fruit is oblong, sometimes 4 or 5 pounds in weight, dark green, and prickly on the surface. The white, cottony flesh has a rich aromatic flavor. The tree is rarely more than 20 feet high and has thick glossy leaves and large greenish flowers; it is tropical in its requirements and will grow only in southern Florida." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 47874.

49259. *CANAVALLI ENSIFORME* (L.) DC. Fabaceæ. Jack bean.

"These are called *frisol del diable*, or 'devil beans.'" (*Wolcott.*)

"The jack bean is a native of the West Indies and the adjacent mainland and is a bushy semierect annual with coarse stems, thickish leaves, purplish flowers, and hard white pods 9 to 14 inches long, each containing 10 to 14 white seeds. Usually the roots are well tubercled, and the plant will withstand much drought. It is remarkably free from insects and fungous diseases and is but slightly affected by root-knot. It is valuable as forage and as a cover crop or for green manure." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 46977.

49260. *CARICA PAPAYA* L. Papayaceæ. Papaya.

"Seeds of a big variety of papaya." (*Wolcott.*)

For previous introduction, see S. P. I. No. 47586.

49261 to 49264. *SACCHARUM OFFICINARUM* L. Poaceæ. Sugar cane.

From Fajardo, Porto Rico. Seeds purchased from R. A. Veve, of the Fajardo Sugar Co. Received January 9, 1920.

"These varieties are known to produce fertile seeds and juices of high density." (*Veve.*)

49261. *Cristalina.*

49263. *D117.*

49262. *D109.*

49264. *D433.*

49265. *MANIHOT ESCULENTA* Crantz. Euphorbiaceæ. Cassava.
(*M. utilissima* Pohl.)

From Kingston, Jamaica. Cuttings presented by William Harris, Government botanist and superintendent of public gardens. Received August 11, 1919. Numbered January, 1920.

Introduced for testing in the southern United States, Hawaii, and Porto Rico. *Rodney.*

49266. *SACCHARUM OFFICINARUM* L. Poaceæ. Sugar cane.

From Fajardo, Porto Rico. Seeds purchased from R. A. Veve, of the Fajardo Sugar Co. Received January 9, 1920.

"One of the varieties known to produce fertile seeds and juices of high density." (*Veve.*)

Rayada (ribbon).

49267. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. **Cassava.**
(*M. utilisissima* Pohl.)

From Kingston, Jamaica. Cuttings presented by William Harris, Government botanist and superintendent of public gardens. Received August 11, 1919. Numbered January, 1920.

Introduced for testing in the southern United States, Hawaii, and Porto Rico.

White red-trash.

49268 to 49278.

From Valparaiso, Chile. Seeds presented by C. F. Deichman, American consul in charge. Received January 19, 1920. The descriptive notes are adapted from Castillo and Dey, *Jeografía Vegetal del Rio Valdivia*, unless otherwise stated.

49268. AEXTOXICON PUNCTATUM Ruiz and Pav. Euphorbiaceæ.

Tiguc. A Chilean tree belonging to the euphorbia family, with small colorless scales covering all of its parts and with dense foliage. The leaves, quite stiff and narrowly oblong in shape, are very dark green on the upper surfaces and light green or even whitish on the lower surfaces. The small white flowers are borne in short axillary racemes, and the fruits are small, black olive-shaped drupes. By reason of its beauty the wood is admirably suited for the making of small furniture, etc.

For previous introduction, see S. P. I. No. 44407.

49269. CRINODENDRON HOOKEBIANUM Gay. Elæocarpaceæ.

Coicopio. A small tree, up to 30 feet in height, widely distributed in the valleys of central and southern Chile. The narrow serrulate leaves are from 3 to 5 inches long, and the blood-red fleshy flowers appear solitary in the axils. The wood, which is very white, is said to be very good for building purposes. (Adapted from *Curtis's Botanical Magazine*, pl. 7160.)

49270. EUCRYPHIA CORDIFOLIA Cav. Eucryphiaceæ.

Muermo. An ornamental and also useful Chilean tree which attains a height of about 15 feet, with thick, leathery, shining leaves and aromatic white flowers which appear in the spring and make the tree a beautiful sight. Because of the abundance of nectar, this tree is a favorite with the bees. The bark, rich in tannin, is utilized in dyeing and also in medicine.

For previous introduction, see S. P. I. No. 34391.

49271. EUCRYPHIA PINNATIFOLIA Gay. Eucryphiaceæ.

Guindo santo. An evergreen shrub or bush, from 3 to 10 feet high, which is particularly attractive because of its large white flowers, 2½ to 3 inches across, not unlike a large single rose with a tuft of stamens in the center. It does best in a rather moist situation protected from the strongest rays of the sun. (Adapted from *The Garden*, vol. 77, p. 421.)

49272. LAURELIA SEMPERVIRENS (Ruiz and Pav.) Tulasne. Monimiaceæ.
(*L. aromatica* Juss.)

Laurcl. A tall evergreen tree with oblong, leathery leaves having an agreeable aromatic odor. It is a native of Chile, where the bark, leaves, and flowers are used medicinally as a remedy for headaches, bronchitis, digestive disorders, etc. The wood is valuable not so much because of

49268 to 49278—Continued.

its quality as of its abundance and ease of working; it varies in color from white to gray.

For previous introduction, see S. P. I. No. 35967.

49273. MAYTENUS BOARIA Molina. Celastraceæ.

Maiten. A tree with slender pendulous branches, oblong leaves, greenish yellow flowers, and seeds which furnish an oil valuable for certain medicinal purposes. The tree, which is a native of Chile, reaches a height of about 40 feet. Its ornamental value lies chiefly in the nature of the foliage, which responds to the faintest breeze with a restless quivering. The leaves are also valued for forage.

For previous introduction, see S. P. I. No. 43272.

49274. NOTHOFAGUS DOMBEYI (Mirb.) Oerst. Fagaceæ.

(*Fagus obliqua* Mirb.)

Coigüe. A majestic tree with leathery oval or elliptic short-stemmed leaves which are of an intense shining green color. It is a native of Chile, where it will grow in soil too damp for cultivation. The wood is quite valuable for building purposes.

For previous introduction, see S. P. I. No. 34381.

49275. NOTHOFAGUS OBLIQUA (Mirb.) Blume. Fagaceæ.

(*Fagus obliqua* Mirb.)

Roble. A tall deciduous tree with oval-oblong clear green leaves and 3-sided nuts. The wood, which is considered a valuable timber, varies in quality with the nature of the soil. The streets of the city of Valdivia are paved with blocks of wood of this tree. It is said to be the most northerly of the Chilean beeches.

For previous introduction, see S. P. I. No. 34384.

49276. NOTHOFAGUS PROCERA Oerst. Fagaceæ.

(*Fagus procera* Poepp. and Endl.)

Rauli. A deciduous Chilean timber tree, once abundant in the Province of Valdivia but now comparatively scarce, owing to the great demand for its wood. The wood is reddish and compact, and is used for parquet flooring, cabinetwork, etc.

For previous introduction, see S. P. I. No. 34386.

49277. PERSEA LINGUE (Ruiz and Pav.) Nees. Lauraceæ.

Lingue. An evergreen tree widely distributed in many parts of Chile. The oval-elliptic leaves are entire. The short-pedicelled flowers are of a dirty yellow color and the small roundish fruits dark violet. The aromatic properties of the leaves and the tannin of the bark make the trees of medicinal value, while the reddish yellow wood is prized both for its beauty and for its durability.

For previous introduction, see S. P. I. No. 42875.

49278. TRICONDYLUS OBLIQUA (Ruiz and Pav.) Kuntze. Proteaceæ.

(*Lomatia obliqua* R. Br.)

Radal. An evergreen tree, up to 35 feet in height, with somewhat grooved branches, alternate leathery leaves with shining upper surfaces, and axillary racemes of white flowers. The leaves are fragrant, reminding one of the European walnut, and an infusion of the bark has purgative properties utilized in medicine.

49279. CROTALARIA LABURNIFOLIA L. Fabaceæ.

From Cairo, Egypt. Seeds presented by the director of the horticultural section, Gizeh Branch, Ministry of Agriculture. Received January 20, 1920.

A low shrubby plant with slender elongated branches, compound leaves, and terminal and lateral racemes of bright-yellow flowers. It is a native of western India, where it is often seen in gardens because of its flowering throughout the year. It is also used for paper making. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 2, p. 613, and *Hooker, Flora of British India*, vol. 2, p. 84.)

49280. CAMOENSIA MAXIMA Welw. Fabaceæ.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Experiment Station. Received January 24, 1920.

Probably the largest flowered and certainly one of the most delicately beautiful vines in the world. The flowers are sometimes 8 inches long and have a delicious fragrance when first opening; their pure-white fluted petals are margined with gold, changing to a darker tinge with age. This magnificent vine adorns the tops of lofty trees on the edges of forests in tropical Africa. The clusters are pendulous and sometimes contain a dozen flowers. (Adapted from the *Garden Magazine*, vol. 7, p. 229.)

This vine flowered in 1908 in the greenhouses of the United States Department of Agriculture.

For previous introduction, see S. P. I. No. 45608.

49281. NOMOCHARIS PARDANTHINA Franch. Liliaceæ.

From Elstree, Herts, England. Seeds presented by Vicary Gibbs, Aldenham House Gardens. Received January 24, 1920.

A rare liliaceous plant from western China, concerning which Reginald Farrer speaks as follows: "It is most like some hybrid of a minor lily with *Odontoglossum rosii*, combining the perverse and sinister spottings of the one with the frank and graceful loveliness of the other, with a delicacy of shell-pink coloring. You see it on the high alpine grassy slopes of Hpimaw Pass, nodding down at you with myriads of wide-open dark-eyed faces in every shade of pale rose. For 4,000 years the Chinese have devoured its bulbs like onions." (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 66, p. 221.)

49282 to 49284. QUERCUS LYRATA × VIRGINIANA. Fagaceæ. Oak.

From College Station, Tex. Plants presented by H. Ness, horticulturist, Texas Agricultural Experiment Station. Received January 26, 1920. Quoted notes by Mr. Ness.

"The six plants are the second generation (F_2) of *Quercus lyrata* ♂ × *virginiana*, descendants of three different mother plants of the first generation. Since the first generation produced at the time no male flowers, the second generation are deferred hybrids. There are three possible male parents of this second generation; namely, the post oak (*Q. minor*), the water oak (*Q. nigra*), and the live oak (*Q. virginiana*)."

49282. "No. 1."

49284. "No. 3."

49283. "No. 2."

49285. LYCOPERSICON ESCULENTUM Mill. Solanaceæ. Tomato.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, Porto Rico Agricultural Experiment Station. Received January 28, 1920.

"Seed of the native tomato. There is apparently only one variety, a small wrinkled kind, somewhat bitter, immune to blight, and used mainly to flavor soups." (*May*.)

49286. ORYZA SATIVA L. Poaceæ. Rice.

From Manozuazabo, Santo Domingo. Seeds presented by Juan Gonzalez, through T. S. Muriel, instructor of agriculture. Received January 28, 1920.

"Called 'Cana negra.'" (*Muriel*.)

49287. STRANVAESIA DAVIDIANA Decaisne. Malaceæ.

From Kew, England. Seeds presented by W. Watson, curator, Royal Botanic Gardens. Received January 28, 1920.

Variety *salicifolia*. Probably a willow-leaved form.

"A shrub 4 to 20 feet in height with oblong or oblong-lanceolate sharp-pointed green leaves, loose clusters of white flowers, and roundish scarlet fruits. It is a native of western and central China." (*Alfred Rehder*.)

49288 to 49324.

From Lourenco Marques, Mozambique. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 28, 1920. Quoted notes by Doctor Shantz.

**49288. ALBIZZIA ADIANTHIFOLIA (Schum.) W. F. Wight. Mimosaceæ.
(*A. fastigiata* E. Mey.)**

"(No. 190. Lourenco Marques, Mozambique. October 27, 1919.) A large spreading leguminous tree; favored as a shade tree."

49289. ANNONA RETICULATA L. Annonaceæ. Custard-apple.

"(No. 196. Lourenco Marques, Mozambique. October 27, 1919.) Seed of an *Annona* saved from a local tree by Mrs. John J. Ray, wife of the American consul. About 4 inches across; excellent variety."

49290. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"(No. 197. Lourenco Marques, Mozambique. October 27, 1919.) Seed of a locally grown variety obtained from the market."

49291. ARISTOLOCHIA sp. Aristolochiaceæ.

"(No. 211. Lourenco Marques, Mozambique. October 27, 1919.) Seed of a vine used to cover fences and hedges."

49292. BIDENS PILOSA L. Asteraceæ.

"(No. 188. Nelspruit, Transvaal. October 20, 1919.) The blackjack; a good forage plant, eaten as readily as alfalfa."

49293. CAJAN INDICUM Spreng. Fabaceæ. Pigeon-pea.

"(No. 192. Lourenco Marques, Mozambique. October 27, 1919.) Local beans purchased in the market."

49294. CAISSIA sp. Cæsalpiniaceæ.

"(No. 183a. Nelspruit, Transvaal. October 20, 1919.) An acacialike plant with sticky, long, dark pods; not eaten by stock."

49288 to 49324—Continued.

49295. *CROTALARIA* sp. Fabaceæ.

"(No. 184. Nelspruit, Transvaal. October 20, 1919.) Apparently a perennial legume; 8 inches high."

49296. *CROTALARIA* sp. Fabaceæ.

"(No. 203. Lourenco Marques, Mozambique. October 27, 1919.) A low spreading leguminous shrub with yellow flowers."

49297. *DELONIX REGIA* (Boj.) Raf. Cæsalpiniaceæ.

(*Poinciana regia* Hook.)

"(No. 195. Lourenco Marques, Mozambique. October 27, 1919.) The most abundant street tree; leaves large and bipinnate; pods $1\frac{1}{2}$ inches broad and 12 to 18 inches long, remaining on the tree a long time."

49298. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 175. Kenkelbosch, Transvaal. September 10, 1919.) 'Jackal's fruit.' A sweetish fruit produced in abundance on a low shrub. Not eaten to any extent by the people; occasionally used as jam."

49299. *DIOSPYROS* sp. Diospyraceæ.

Persimmon.

"(No. 176. Nelspruit, Transvaal. October 20, 1919.) Similar to No. 175 [S. P. I. No. 49298]."

49300. *ERAGROSTIS* sp. Poaceæ.

Grass.

"(No. 179. Mafeking, Cape Province. October 2, 1919.) Looks like an important forage plant."

49301. *ERAGROSTIS* sp. Poaceæ.

Grass.

"(No. 180. Mafeking, Cape Province. October 2, 1919.) Grass with the habit of *Sporobolus airoides*."

49302. *ERYTHROXYLON* sp. Erythroxylaceæ.

"(No. 200. Lourenco Marques, Mozambique. October 27, 1919.) A small cherrylike fruit; apparently good when fully ripe."

49303. *HARPAGOPHYTUM PROCUMBENS* (Burchell) DC. Pedaliaceæ.

"(No. 178. Taungs, Cape Province. September 28, 1919.) A plant with its seed large and armed with many recurved hooks."

49304. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 189. Nelspruit, Transvaal. October 20, 1919.) Plants with the bunch habit, growing here naturally and called 'buffalo grass.'"

49305. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"(No. 208. Lourenco Marques, Mozambique. October 27, 1919.) A low spreading Ipomoea with reddish lavender flowers."

49306. *JACARANDA* sp. Bignoniaceæ.

"(No. 145. Near Pretoria, Transvaal, October 12, 1919, and Lourenco Marques, Mozambique, October 27, 1919.) The most common street tree, a beautiful blue-flowered ornamental which blooms profusely."

49307. *MACADAMIA TERNIFOLIA* F. Muell. Proteaceæ.

Macadamia.

"(No. 185. Nelspruit, Transvaal. October 20, 1919.) A fine large tree grown by H. S. Hall, who secured seed from Ceylon."

49308. *MIMUSOPS MARGINATA* N. E. Brown. Sapotaceæ.

"(No. 198. Lourenco Marques, Mozambique. October 27, 1919.) A tree, 10 to 20 feet high, bearing a small plumlike fruit, dry and puckery

49288 to 49324—Continued.

when green, but sweet when fully ripe. Eaten by the natives; also made into an intoxicating drink."

49309. *MOMORDICA* sp. Cucurbitaceæ.

"(No. 212. Lourenco Marques, Mozambique. October 27, 1919.) A small cucurbitaceous vine with yellow and green mottled fruits changing to bright red and with very red flesh."

49310. *PAHUDIA QUANZENSIS* (Welw.) Prain. Cæsalpiniaceæ.

(*Afzelia quanzensis* Welw.)

Mahogany bean.

"(No. 207. Lourenco Marques, Mozambique. October 27, 1919.) A broad spreading tree with very rich pinnate foliage, regarded as one of the most beautiful trees for street planting and for parks. It produces a beautiful mahoganylike wood, but much coarser grained."

49311. *PERESKIA ACULEATA* Mill. Cactaceæ.

"(No. 210. Lourenco Marques, Mozambique. October 27, 1919.) A leafy Opuntialike vine with yellow fruits half an inch in diameter. Used as an ornamental."

49312. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"(No. 182. Johannesburg, Transvaal. October 4, 1919.) Presented by S. P. Powell; said to be a very fine variety."

49313. *RICINUS COMMUNIS* L. Euphorbiaceæ.

Castor-bean.

"(No. 201. Lourenco Marques, Mozambique. October 27, 1919.) Castor-oil bean plants are abundant here."

49314. *SCHEFFLERODENDRON GAZENSE* E. G. Baker. Fabaceæ.

"(No. 194. Lourenco Marques, Mozambique. October 27, 1919.) A large bean from a very attractive tree found in the coastal forest."

49315. *SCLEROCARYA CAFFRA* Sond. Anacardiaceæ.

Morula.

"(No. 193. Lourenco Marques, Mozambique. October 27, 1919.) A large, beautiful tree which bears edible fruit in abundance. The edible seed is a valuable oil producer. It is causing almost as much interest here as the *mufurra*. The seeds are very hard to crack."

49316. *TECOMA STANS* (L.) Juss. Bignoniaceæ.

Yellow tecoma.

"(No. 209. Lourenco Marques, Mozambique. October 27, 1919.) A shrub 4 to 6 feet high, bearing yellow trumpet-shaped flowers; one of the most widely used ornamentals here."

49317. *TRICHOLAENA ROSEA* Nees. Poaceæ.

Natal grass.

"(No. 187. Nelspruit, Transvaal. October 20, 1919.) A grass which seems to grow as a weed in the bush veld and in Mozambique; it makes very rapid growth as a ruderal, giving way to *Cynodon*."

49318. *VICIA* sp. Fabaceæ.

"(No. 181. Kimberley, Cape Province. September 12, 1919.) Seed of a small Vicialike plant."

49319. *CARDIOGYNE AFRICANA* Bureau. Moraceæ.

M'bulu.

"(No. 204. Lourenco Marques, Mozambique. October 27, 1919.) *M'bulu*. A shrub or small tree like a mock orange."

For an illustration of this shrub, see Plate II.

49320. *OCHNA ATROPURPUREA* DC. Ochnaceæ.

"(No. 205. Lourenco Marques, Mozambique. October 27, 1919.) An attractive tree with pink flowers and fruit as showy as the flowers; black seeds on a pink receptacle."

49288 to 49324—Continued.

49321. *OCHNA MOSSAMBICENSIS* Klotzsch. Ochnaceæ.

"(No. 206. Lourenco Marques, Mozambique. October 27, 1919.) Similar to No. 205 [S. P. I. No. 49320], but a low bush, seldom over 1 to 3 feet high; seed smaller, but fruit redder and even more showy."

49322. *CONOPHARYNGIA ELEGANS* Stapf. Apocynaceæ.

"(No. 191. Lourenco Marques, Mozambique. October 27, 1919.) A very abundant small tree or shrub covered with large, angular pods. When in full foliage it is a very attractive ornamental and may be of value as a rubber plant. Latex abundant."

For an illustration of this plant, see Plate III.

49323. (Undetermined).

"(No. 199. Lourenco Marques, Mozambique. October 27, 1919.) Similar to No. 198 [S. P. I. No. 49308], but fruit very tart and pleasant; cherrylike."

49324. (Undetermined.)

"(No. 177. South of De Aar, Cape Province. September 13, 1919.) A few lily seeds."

49325 to 49334.

From Coban, Guatemala. Plant material collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received January 29, 1920. Quoted notes by Mr. Popenoe.

49325. *CHAMAEDOREA* sp. Phœnicaceæ.

Pacaya palm.

"(No. 236. Coban, Alta Vera Paz. December 27, 1919.) Plants of the *pacaya*, or Guatemalan salad palm, a species which was introduced into the United States in 1917 [see S. P. I. No. 45022], but which is worthy of a wider trial than has yet been given it. It is a tender plant, probably suitable for cultivation only in southern Florida. It likes a half-shade, plenty of moisture, and a soil rich in humus. It is a handsome small palm reaching about 20 feet in height, with a straight trunk about 2 inches in diameter and a crown of graceful pinnate leaves about 6 feet long. In Guatemala the leaves are often cut and used for house decoration. The young inflorescences, which are taken before the spathes are open, furnish a popular dish, *pacaya* salad. They can also be fried in batter, or boiled with other vegetables. They have a slightly bitter taste. If these inflorescences could be produced commercially in southern Florida, *pacaya* salad would undoubtedly find a place upon the menus of large hotels and restaurants in northern cities."

49326 to 49328. *DAHLIA MAXONII* Safford. Asteraceæ.

Dahlia.

49326. "(No. 237. Coban, Alta Vera Paz. December 27, 1919.) *Single white* variety. Cuttings of a rare form of the common tree dahlia of Guatemala, producing single white starlike flowers up to 5 inches in diameter. It appears to occur only as a cultivated or semicultivated form; I have never seen it among the wild plants on the mountainsides. In habit of growth and other characteristics except the color of the flower it is identical with the typical *Dahlia maxonii*."

49327. "(No. 238. Coban, Alta Vera Paz. December 27, 1919.) *Double white* variety. Cuttings from a plant in a dooryard at Tac-



A LATEX-PRODUCING SHRUB FROM MOZAMBIQUE. (*CONOPHARYNGIA ELEGANS* STAPF, S. P. I. No. 49322.)

This small tree or large shrub is a very handsome ornamental when in full foliage, and as such merits attention in the South. Moreover, it produces very abundantly a milky juice, or latex, which has been suggested as of value for rubber. This shrub is closely allied to the genus *Landolphia*, which includes the most important rubber plants of Africa. (Photographed by Dr. H. L. Shantz, Lourenco Marques, Mozambique, October 25, 1919; P36561FS.)



AN EAST AFRICAN RELATIVE OF THE MANGOSTEEN. (*GARCINIA LIVINGSTONEI* T. ANDERS., S. P. I. No. 49462.)

The munkononga, or mutungun as the natives call this fruit, is one of the best indigenous fruits of East Africa. The tree is very productive and is itself very ornamental, as are the bright-orange fruits. The flesh of the fruits is juicy, orange colored, and of a delicious sprightly acid flavor. This species has already fruited in Florida, where it seems quite at home. (Photographed, slightly reduced, by Dr. H. L. Shantz, Victoria Falls, Southern Rhodesia, November 9, 1919; P36752FS.)

49325 to 49334—Continued.

tic, Alta Vera Paz. This variety of the common Guatemalan tree dahlia is in cultivation at Antigua as well as in Alta Vera Paz, but it appears never to occur wild. Like the double lilac variety it has coarser leaves than the typical *Dahlia maxonii*, and its flowers are very double, pure white, and 3 to 4 inches in diameter."

49328. "(No. 239. Coban, Alta Vera Paz. December 27, 1919.) *Double lilac* variety. Cuttings from a plant growing in a dooryard at Tactic, Alta Vera Paz. This variety resembles the type in color, though it is sometimes of a deeper shade of lilac with less pink, and, like the double white variety, it produces flowers 3 to 4 inches in diameter. It may be noted, however, that the double-flowering varieties produce fewer flowers than the type which is single. The double lilac form is rather common in cultivation throughout Alta Vera Paz, but I have never seen it wild."

49329 and 49330. PERSEA SCHIEDEANA Nees. Lauraceæ.

Coyô.

49329. "(No. 240. Coban, Alta Vera Paz. December 27, 1919.) *Vera Paz*. Cuttings of a superior variety of the coyô from the property of Padre Rivera in Tactic. An illustration of the fruit may be seen in Department Bulletin No. 743, 'The Avocado in Guatemala,' plate 13; in this plate an ordinary coyô is shown on the right, and the Vera Paz variety (as I suggest it be called) appears on the left. It is the finest coyô I have seen, and I recommend it strongly for trial in southern Florida and southern California, since I have come more and more to feel that the coyô, in its finer varieties, is a fruit of even better flavor than the avocado. Unfortunately, this species has never been given horticultural attention, and doubtless much remains to be done before it can take a place in our orchards alongside the avocado. The first step, certainly, is to secure the best available varieties, and I feel sure that the *Vera Paz* is one of them, for I have searched through the territory in which this fruit is abundant and I have found none better. Its pear-shaped fruits weigh about a pound and have a thick, leathery skin, ivory-white flesh containing much oil and with a rich, coconutlike flavor, and a seed about the same size as that of our best avocados.

"The coyô probably does not come into bearing as young as the avocado, and as a rule it is not so productive in old age; but varieties which will be satisfactory in this latter respect can probably be obtained. I am inclined to believe also that the fruit from young trees may be much inferior in quality to that from old ones. These points and several others must be determined by a trial in the United States and elsewhere. Since the tree occurs in Guatemala at altitudes ranging from 300 to 6,000 feet, it seems probable that the species will succeed in cool regions, like southern California and southern Florida, as well as in warm ones, like Cuba and Porto Rico."

49330. "(No. 241. Coban, Alta Vera Paz. December 27, 1919.) *Hempstead*. This variety has been called to my attention by Robert W. Hempstead, after whom I suggest it be named. The parent tree is growing in a small finca along the road from Coban to San Cristobal Vera Paz, and the fruit, which I have not seen,

49325 to 49334—Continued.

is described as large and of excellent quality. It is said to be pear shaped, somewhat slender, up to about 2 pounds in weight, with ivory-white flesh free from fiber and of excellent quality in every way. The parent tree is probably 50 years old, if not more; it is about 50 feet high and is said to be productive; at the time this budwood was cut (Dec. 26) it was in flower. The season of ripening is August and September.

"In this variety and the previous one (Vera Paz) I believe we have two coyós of as good quality as can be obtained, and with them as a beginning I believe it will be readily possible to develop from this species a fruit new to horticulture and of great value for tropical and subtropical regions."

49331. *RUBUS ADENOTRICHOS* Schlecht. Rosaceæ. Blackberry.

"(No. 243a. Coban, Alta Vera Paz. December 27, 1919.) Probably the best wild blackberry of Alta Vera Paz. It is not, however, so distinct from the cultivated berries of the North as to make it of great interest to northern horticulturists. It is a vigorous species, making a bush about 10 feet high and fruiting fairly profusely. The fruits are three-quarters of an inch to an inch in length and in flavor and color not distinguishable from some of the cultivated blackberries. In Kekchi it is, along with two or three other species, called *tokán*; in Spanish *mora*."

49332. *RUBUS GLAUCUS* Benth. Rosaceæ. Andes berry.

"(No. 244a. Coban, Alta Vera Paz. December 27, 1919.) *Tokán uuk* (Kekchi); *mora* (Spanish). The most remarkable *Rubus* of Vera Paz and one which seems to possess unusual promise. It can best be likened to the loganberry in character, yet its flavor is more nearly that of the red raspberry. Because of the large size of the fruits and their excellent quality it merits a careful trial in the United States.

"In habit the plant is suberect or even trailing, and it makes little wood. The canes sometimes reach 10 to 15 feet in length. The stems and lower surfaces of the leaves are silvery white, by which means it is easy to distinguish the species from the others which occur in Alta Vera Paz. Compared to most of them it is rare. The leaves are trifoliate, with lanceolate to elliptic leaflets, long-acuminate and sharply serrate. The flowers are white, in panicles up to 6 inches long. The fruits vary from round to oblong in form and are often an inch in length; in cultivation they would quite likely be even larger.

"The wild plants are not very productive, but their productiveness could be increased greatly by proper pruning. The fruit is not borne at the ends of the canes but upon short fruiting laterals, and pruning would increase the number of these.

"By the Indians of Vera Paz this is esteemed as the finest of the wild species of *Rubus*, an esteem to which it seems fully entitled. The plant is found occasionally along roadsides and in the edge of scrub. It likes a heavy soil and plenty of moisture."

49333. *RUBUS URTICAEFOLIUS* Poir. Rosaceæ. Blackberry.

"(No. 242a. Coban, Alta Vera Paz. December 27, 1919.) *Tokán yak* (Kekchi); *mora* (Spanish), a wild blackberry abundant in Alta Vera Paz at altitudes of 3,000 to 5,000 feet. It is a robust and vigorous

49325 to 49334—Continued.

species, the most productive of those which occur in Vera Paz. It is readily distinguishable from the others by its stout canes, densely clothed with soft red spines.

"The plant forms a more or less compact bush up to 15 feet in height. The leaves have three or five oblong-ovate, shortly acuminate, finely serrate leaflets. The fruits, which are produced in terminal panicles 4 to 8 inches long, are about half an inch in length, oblong to ovate in outline, composed of numerous drupelets smaller than those of the cultivated blackberries. The color of the ripe fruit is nearly black; when immature it is wine colored. The sweet flavor somewhat resembles that of the blackberry. The juice is abundant, and the seeds are small and not hard.

"Because of its vigorous habit of growth, its productiveness, and the high quality of the fruit this species deserves a trial in the southern and southwestern United States."

For previous introduction, see S. P. I. No. 45356.

49334. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 245a. Coban, Alta Vera Paz. December 27, 1919.) 'Cold country' corn, as it is called here; long slender ears of flint corn, produced in the vicinity of Coban, probably at an altitude of about 4,000 feet. Of interest to those engaged in the study or breeding of corn."

49335. *BELOU MARMELLOS* (L.) Lyons. Rutaceæ.

Bel.

(*Aegle marmelos* Correa.)

From Honolulu, Hawaii. Seed presented by Dr. H. L. Lyon, department of botany and forestry, Hawaiian Sugar Planters' Experiment Station. Received March 12, 1920.

"Variety *subglobosa*." (Lyon.)

A good-sized tree with ash-colored bark; few irregular branches, often with sharp, strong spines; and densely pubescent trifoliolate leaves. It is commonly cultivated throughout India and ascends the mountains to about 4,000 feet. The wild variety has a far inferior fruit. The wood is light colored and variegated, compact and hard. A native drum is made from it, and in some parts it is used for the hubs of wheels and for sugar crushers. The juice of the fruit makes a delicious sherbet, and is much esteemed in Bengal as a hot-weather beverage. The bark, roots, and fruit are used medicinally by the natives. (Adapted from *Beddome, Flora Sylvatica*, pl. 161.)

For previous introduction, see S. P. I. No. 46477.

49336 to 49339. *SACCHARUM OFFICINARUM* L. Poaceæ.

Sugar cane.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Botanical Station. Received January 29, 1920. Quoted notes by Mr. Grey.

49336. "Harvard Seedling 144."

49337. "Harvard Seedling 4124. Immune to mottling."

49338. "Harvard Seedling 6047. High in sugar, averaging from 19 to 20 per cent sucrose in our own hand-mill analyses."

49339. "Harvard Seedling 6098."

49340. CASTANOPSIS HYSTRIX A. DC. Fagaceæ.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received March 18, 1920.

A low evergreen tree with wide-spreading branches, fairly common at low altitudes on Mount Omei, Szechwan, and in the surrounding country. The contrast between the rufous-brown young leaves and the shining green upper surfaces of the older leaves is striking. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, pt. 1-2, p. 197.)

49341. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Cienfuegos, Cuba. Seeds presented by Robert M. Grey, Harvard Botanical Station. Received January 29, 1920.

"High in sugar, averaging from 19 to 20 per cent sucrose in our own hand-mill analyses." (*Grey.*)

49342. TRITICUM AESTIVUM L. Poaceæ. Wheat.
(*T. vulgare* Vill.)

From New South Wales. Seed obtained through J. W. T. Duvel, United States Grain Corporation, New York. Received January 31, 1920.

Roseworth. [This is the name of an agricultural station in New South Wales. No description of this variety is at present available.]

49343. ROSA LAXA Retz. Rosaceæ. Rose.

From Elstree, Herts, England. Seeds presented by Hon. Vicary Gibbs, Aldenham House Gardens. Received January 31, 1919.

A beautiful single rose, native to the Altai Mountains and central Siberia. It has arching stems, seven to nine oblong, serrate leaflets, and very attractive white or pink flowers which are borne singly or in twos or threes. The globose pulpy fruits are bright red. (Adapted from *Willmott, The Genus Rosa*, pt. 8, pl. 53.)

For previous introduction, see S. P. I. No. 47161.

49344. HAEMATOSTAPHIS PIERREANA Engl. Anacardiaceæ.

From Lambarene, Gabon, French Equatorial Africa. Seeds presented by Edward A. Ford, Société des Missions Evangéliques de Paris. Received January 31, 1920.

"Seeds of a native fruit which I saw for the first time only recently. It has a very acrid taste, but makes excellent jam. I have not seen the tree; the name given me by the Fang people is *fogo*. It may be the same as the *ofos*, *Pseudospondias longifolia* (*Haematostaphis pierreana*), but I am not sure." (*Ford.*)

A tall tree with dense foliage composed of unequally pinnate membranous leaves over a foot in length. The fruit is ovoid with a thick layer of flesh, and is about an inch in length. (Adapted from *Engler, Botanische Jahrbücher*, vol. 36, p. 219.)

49345. COIX LACRYMA-JOBI L. Poaceæ. Job's-tears.

From Hangchow, Chekiang, China. Seeds collected by O. F. Cook, of the Bureau of Plant Industry, United States Department of Agriculture. Received February 2, 1920.

"A form of Job's-tears with somewhat flattened seeds." (*Cook.*)

49346 to 49349. GOSSYPIUM sp. Malvaceæ. Cotton.

From Lima, Peru. Bolls presented by James H. Roth, American vice consul in charge. Received March 1, 1920. Quoted notes by Mr. Roth.

"Rough cotton, sometimes known as vegetable wool, cultivated a few miles inland from the port of Payta, in the vicinity of Catacaos, valley of the Piura River, Peru. These forms are practically identical with those that have been discovered in prehistoric graves where they were buried with the mummies."

49346. "White bolls. Samples of the best kind of rough Peruvian cotton grown in the Piura-Payta section of the country."

49347. "*Mestizo*, naturally colored."

49348. "*Pardo*, brown and maroon or purplish."

49349. "*Duro*. Undeveloped boll, having been stung by an insect known here as 'rabi-atado,' a plague which is doing enormous damage in this province."

49350. SACCHARUM OFFICINARUM L. Poaceæ. Sugar cane.

From Georgetown, Demerara, British Guiana. Seeds presented by R. Ward, superintendent, Botanic Gardens. Received February 4, 1920.

Demerara No. 108

49351 to 49356. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilissima* Pohl.)

From Barbados, British West Indies. Cuttings presented by John R. Bovell, Director of Agriculture. Received August 12, 1919, grown in quarantine, and numbered in March, 1920.

Introduced for testing in Porto Rico and Hawaii.

49351. *Friendship*.

49354. *Trinidad No. 2*.

49352. *Helada*.

49355. *Trinidad No. 3*.

49353. *Trinidad No. 1*.

49356. *White Greenaway*.

49357. PHYLLOSTACHYS MITIS (Lour.) A. and C. Rivière. Poaceæ. Bamboo.

From Nice, France. Rhizomes presented by Dr. A. Robertson Proschowsky. Received February 5, 1920.

"As concerns the bamboo, it is the tallest species of those commonly cultivated here, and the culms usually attain a height of 10 to 12 meters, rarely more. It is an exceedingly hardy species and a very useful plant, the culms being strong and quite straight. Prof. Trabut, of Algiers, expressed the opinion that this bamboo is the most useful also in Algeria." (*Proschowsky*.)

49358 and 49359. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.
(*M. utilissima* Pohl.)

From Barbados, British West Indies. Cuttings presented by John R. Bovell, Director of Agriculture. Received August 12, 1919, grown in quarantine, and numbered in March, 1920.

Introduced for testing in Porto Rico and Hawaii.

49358. *B. 101*.

49359. *Blue Top*.

49360 to 49363. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Antigua, British West Indies. Seeds presented by Arnold W. Gallwey, acting curator and agricultural superintendent. Received February 6, 1920.

49360. *B. 3/12*.

49362. *D. 74*.

49361. *B. 4596*.

49363. *D. 109*.

49364 and 49365.

From Blackwood, South Australia. Seeds presented by Edwin Ashby, "Wittunga." Received February 9, 1920. Quoted notes by Mr. Ashby.

49364. GREVILLEA BUXIFOLIA (J. E. Smith) R. Br. Proteaceæ.

"A native of New South Wales, where it grows on rough, sandy land, but it makes a nice shrub in my garden, about 6 feet high. It will stand hard cutting. It flowers freely, the flowers being rather more interesting than showy. All the flowers are clothed with silky hairs. It should do well in California."

49365. GREVILLEA LAVANDULACEA Schlecht. Proteaceæ.

"A native of South Australia, where it grows from a foot to 18 inches high on a sandy or clayey subsoil, but it seems to prefer broken rocky soil (quartzite). It does very well on rockeries and should be treated as a rock plant (dwarf, hard-wooded shrub). It produces a mass of pink flowers from the beginning of our winter until late spring. It should do well in California, where it will be an acquisition to those who have rock gardens."

For previous introduction, see S. P. I. No. 47189.

49366 and 49367. RICINUS COMMUNIS L. Euphorbiaceæ.

Castor-bean.

From Huatabampo, Sonora, Mexico. Seeds presented by J. R. Uribe, Hacienda Delia, Rio Mayo. Received February 9, 1920.

"Samples of the beans which grow wild here." (Uribe.)

49366. Seeds 18 mm. long by 15 mm. wide; light gray with a few brown markings.

49367. Seeds 15 mm. long by 8 mm. wide; light gray, mostly overlaid with dark-brown markings.

49368. FESTUCA HOOKERIANA F. Muell. Poaceæ.

Grass.

(*Schedonorus hookerianus* Benth.)

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary and director. Received February 9, 1920.

A stout perennial grass, 2 to 4 feet in height, indigenous to New South Wales, Victoria, and Tasmania. It has flat, rather long leaves, very loose panicles up to a foot in length, and rigid flowering glumes. It stands mowing and pasturing well and is relished by stock. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 107, and *Bentham, Flora Australiensis*, vol. 7, p. 656.)

49369. GLADIOLUS MALANGENSIS Baker. Iridaceæ.

Gladiolus.

From Ochileso, Angola, West Africa. Bulbs presented by H. A. Neipp, American Mission. Received February 6, 1920.

A West African gladiolus from 1 to 2 feet in height, with three or four erect, linear, rigid leaves and a simple or branched inflorescence. The deep-red flowers are borne in loose spikes 4 to 6 inches long. (Adapted from *Bulletin de l'Herbier Boissier*, 2d ser., vol. 1, p. 867.)

49370 to 49383.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 9, 1920. Quoted notes by Mr. Popenoe.

49370 to 49383—Continued.

49370. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

"(No. 266. Tucuru, Alta Vera Paz. January 12, 1920.) Suckers of a variety of pineapple from Tucuru at an altitude of about 3,200 feet. It is known to the few Americans in this region as the 'sugar-loaf' pineapple because of its sweetness. It is described by R. W. Hempstead, through whose courtesy I have obtained these suckers, as broadly oval, large, with white, very juicy, sweet-flavored flesh."

49371. *ANNONA SCLERODERMA* Safford. Annonaceæ.

"(No. 249a. Tucuru, Alta Vera Paz. January 12, 1920.) *Posh* (Kekchi); Spanish orthography *poa*, sometimes called in English 'hard-shelled custard-apple.' Seeds of a rare species of *Annona* from Chama, on the Rio Chixóy; altitude 950 feet.

"In size of tree and habit of growth this species resembles *Annona reticulata*. In foliage, however, it is quite distinct. The leaves are oblong to oblong-lanceolate, 6 to 9 inches long, 2½ to 3 inches broad, shortly acuminate, coriaceous, deep green and almost glossy above, paler beneath.

"The fruits, which are borne on stout stalks about an inch long, are broadly heart-shaped to round and up to 4 inches in diameter. The surface, which is dull gray-green, differs in character from that of most other *Annonas*; it is divided by prominent ridges into irregularly pentagonal areas. The skin or outer covering is nearly a quarter of an inch thick and coarsely granular in texture. It forms a brittle shell which effectively protects the flesh and makes it possible for the ripe fruit to be handled roughly without injury to the flesh. The latter, which is snow-white and divided into loosely cohering segments each containing a seed the size of a bean, is of remarkably pleasant flavor suggesting that of the sugar-apple (*A. squamosa*), with a dash of lemon. Many *Annonas* are heavily sweet or mawkish; not so the *posh*. It has sufficient acidity (more than the cherimoya) to give it sprightliness, and it never cloy the palate.

"The trees which I have seen at Chama are more productive than the average cherimoya. The species may well be compared to *Annona squamosa* in fruiting habit. Abortive fruits, such as many of those borne by most cherimoya trees, are rarely produced, but there is considerable variation in the size. The average is about 3 inches in diameter.

"This species evidently belongs to the tropical lowlands; hence, in the United States, it is likely to succeed only in southern Florida."

For previous introduction, see S. P. I. No. 40835.

49372. *CHAETOCHELOA PANICULIFERA* (Steud.) Hitchc. Poaceæ. Grass.
(*Setaria paniculifera* Fourn.)

"(No. 258a. Tucuru, Alta Vera Paz. January 12, 1920.) *Hotz kor* (Kekchi). Seeds collected near Chama. This plant is found commonly throughout Alta Vera Paz, where it is considered one of the best forage grasses. It is thought to be more nourishing than most other grasses, and both horses and cattle eat it readily in spite of the fact that the leaves are covered with somewhat coarse hairs which it might be expected would prove disagreeable to animals.

"*Hotz kor* never forms pastures or solid stands over large areas, but usually grows on slopes or among scrub, where it forms scattered clumps.

49370 to 49383—Continued.

sending up leaves to a height of 4 to 6 feet and flower stalks sometimes 6 or 7 feet above the ground. It is a perennial, and I am told by R. W. Hempstead that it will stand four cuttings a year. It seems particularly adapted to moist regions and for this reason is recommended for trial in the Everglades of Florida."

49373. *CHAMAEDOREA* sp. *Phoenicaceæ*.

Pacayito.

"(No. 271. Tucu, Alta Vera Paz. January 18, 1920.) *Pacayito*, called *kok kib* in Kekchi, a handsome dwarf palm found under dense forest in several parts of Vera Paz. It appears to occur only in regions where there are limestone outcroppings. These plants were collected on the Finca Los Alpes."

49374. *CROTALARIA SAGITTALIS* L. *Fabaceæ*.

"(No. 252a. Tucu, Alta Vera Paz. January 12, 1920.) Seeds of a species growing to about 18 inches in height collected at Finca Samac, near Coban. It should be tested in the South as a cover crop. In Kekchi it is called *tzok tzok xul*."

49375. *JUGLANS* sp. *Juglandaceæ*.

Walnut.

"(No. 265a. Tucu, Alta Vera Paz. January 12, 1920.) Nuts of the *nogal* or native black walnut tree. It is occasionally seen in cultivation but more commonly wild. It makes a shapely tree up to 50 feet in height and yields nuts much like those of *Juglans nigra* but with a thicker shell. Its wood is considered valuable."

49376. *PANICUM HIRSUTUM* Swartz. *Poaceæ*.

Grass.

"(No. 257a. Tucu, Alta Vera Paz. January 12, 1920.) A forage grass, 3 feet high, said to be of good quality. Collected from the roadside near Chama, Alta Vera Paz."

49377. *PASPALUM PANICULATUM* L. *Poaceæ*.

Grass.

"(No. 252a. Tucu, Alta Vera Paz. January 12, 1920.) A pasture grass from the Finca Samac, near Coban. The plant grows to about 2 feet in height and apparently spreads by seeds only. As forage it is considered very good."

49378. *PASPALUM CANDIDUM* (Humb. and Bonpl.) Kunth. *Poaceæ*.

Grass.

"(No. 263a. Tucu, Alta Vera Paz. January 12, 1920.) *Kah tut*. A pasture grass from the Finca Samac, near Coban. It grows about 18 inches in height and is very abundant in the edges of the coffee plantation, where it often forms solid stands. It is cut for feeding to stock and is considered very good for this purpose."

49379. *PASPALUM PANICULATUM* L. *Poaceæ*.

Grass.

"(No. 256a. Tucu, Alta Vera Paz. January 12, 1920.) A grass, growing to about 3 feet in height, found near Chama, on the Rio Chixoy. Said to be a good forage grass."

49380. *PASPALUM Plicatum* Michx. *Poaceæ*.

Black grass.

"(No. 261a. Tucu, Alta Vera Paz. January 12, 1920.) A common pasture grass from the Finca Samac, near Coban. This species grows to about 15 inches in height, and its leaves, though rather small, are abundant."

For previous introduction, see S. P. I. No. 47049.

49370 to 49383—Continued.

49381. *PENNISETUM COMPLANATUM* (Nees.) Hemsl. Poaceæ. Grass.

"(No. 259a. Tucuru, Alta Vera Paz. January 12, 1920.) *Kux kub*. Seeds of a foxtail occurring in pastures of Finca Samac, near Coban, Alta Vera Paz. It grows about 3 feet high and is said to be good forage."

49382. *PENNISETUM DISTACHYUM* (Fourn.) Rupr. Poaceæ. Grass.

"(No. 260a. Tucuru, Alta Vera Paz. January 12, 1920.) *Xul aj*. Seeds of a large grass occurring along ravines and in half-shady places, Finca Samac, near Coban. It grows to 6 feet in height, with leaves an inch broad, and seeds abundantly. It looks like a valuable forage grass."

49383. *PERSEA DONNELL-SMITHII* Mez. Lauraceæ.

"(No. 248a. Tucuru, Alta Vera Paz. January 12, 1920.) *Oh-mash* (Kekchi, for 'monkey avocado'). A wild species of *Persea* found in the valley of Tactic (where these seeds were obtained) and abundantly on the mountains between Tactic and Coban, principally in open places.

"This is a slender tree up to 40 feet in height (commonly about 25 feet), with large oblong-obovate leaves, reddish pubescent beneath, and small terminal panicles of black fruits the size and shape of peas. While its fruit is not edible or useful in any way, the species is of interest as a relative of the avocado and may have value as a stock for the latter, especially for wet lands. Its degree of frost resistance is unknown, but the fact that it occurs in the zone of the Guatemalan avocado indicates that it will probably be as hardy as the latter and maybe even hardier."

49384. *CALLILEPIS* sp. Asteraceæ.

From Nelspruit, Transvaal. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received January 29, 1920.

"(No. 186. Nelspruit, Transvaal. October 20, 1920.) A composite about 10 to 14 inches high, with almost white chrysanthemumlike flowers." (*Shantz*.)

49385 to 49401.

From Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 9, 1920. Quoted notes by Mr. Popenoe.

49385. *POLYGALA FLORIBUNDA* Benth. Polygalaceæ. Chupak.

"(No. 268a. Tucuru, Alta Vera Paz. January 18, 1920.) *Chupak*. Seeds of a handsome shrub, wild and cultivated in Vera Paz. It sends up stems about 6 feet in height, each one terminating in a large loose panicle of purplish flowers. Since it is of easy culture and blooms nearly all the year it is considered a desirable ornamental by Europeans in this region. Its roots are used in place of soap. Presented by Mrs. Gustavo Helmrich, of Finca Samac, near Coban."

For previous introduction, see S. P. I. No. 44683.

49386. *RANDIA ACULEATA* L. Rubiaceæ.

"(No. 269a. Tucuru, Alta Vera Paz. January 18, 1920.) Seeds of a shrub which I have seen only in the vicinity of Purula, Baja Vera Paz. It grows in the edge of the forest, occasionally in the open, and seems to thrive on lots of moisture. It is interesting because of its formal appearance and symmetrical growth, which strongly resembles *Buxus*. It should make an excellent hedge plant and for specimen plants in a

49385 to 49401—Continued.

formal garden should be very attractive. It reaches about 10 feet in height, and its slender branches are clothed with small leaves arranged in clusters. The fruits, which are white when ripe, round, and about half an inch in diameter, increase the ornamental appearance of the plants."

49387. *RUBUS GLAUCUS* Benth. Rosaceæ. **Andes berry.**

"(No. 250a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tokán wuk.* Seeds collected near Santa Cruz, Alta Vera Paz. See No. 244a [S. P. I. No. 49332] for description."

49388. *RUBUS* sp. Rosaceæ. **Blackberry.**

"(No. 255a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tokán.* Seeds of a good blackberry found near Santa Cruz, Vera Paz. Probably the same as No. 243a [S. P. I. No. 49331], but the fruits are not quite as sweet as those of the plant from which the latter seed was obtained."

49389. *SALVIA POPENOEI* Blake. Menthaceæ. **Sage.**

"(No. 254a. Tucuru, Alta Vera Paz. January 12, 1920.) *Tutz unán* (Kekchi). Seeds of a handsome plant found along the roadside between Tactic and Purula. It grows commonly 3 to 5 feet high and bears terminal spikes of bright crimson-scarlet flowers somewhat richer in color than those of *Salvia splendens*."

49390 to 49399. *ZEA MAYS* L. Poaceæ. **Corn.**

49390. No. 1. Dark red.

49391. No. 2. Dark red, but lighter than No. 1.

49392. No. 3. Dirty white; kernels flat.

49393. No. 4. Dirty white; kernels square.

49394. No. 5. Dirty white with a tinge of yellow.

49395. No. 6. Yellow; kernels broad and flat.

49396. No. 7. Yellow; kernels longer and more square.

49397. No. 8. Lighter yellow than Nos. 6 or 7.

49398. No. 9. Light mulberry color with a few darker grains.

49399. No. 10. Dirty white with red streaks.

49400. *COCCOSIPSILUM REPENS* Swartz. Rubiaceæ.

"(No. 267a. Tucuru, Alta Vera Paz. January 18, 1920.) An interesting herbaceous plant found on moist slopes in Vera Paz. It creeps along the ground, making stems about 2 feet in length, and produces pale-blue flowers about half an inch broad, followed by bright-blue fruits in clusters of two or three, half an inch in diameter and very beautiful."

49401. *PASPALUM FASCICULATUM* Willd. Poaceæ. **Grass.**

"(No. 246. Tucuru, Alta Vera Paz. January 12, 1920.) *Ochoy*, a wet-land forage grass from Chama, on the Rio Chisoy, about 8 leagues from Coban. This plant makes excellent forage, being considered one of the very best. It grows vigorously, spreading by means of underground rhizomes, and sends up shoots ordinarily to a height of about 3 feet. It rarely flowers."

49402. PICEA sp. Pinaceæ.**Spruce.**

From Shansi, China. Seeds presented by Joseph Bailie, Berkeley, Calif.
Received February 20, 1920.

A Chinese spruce of possible value as an ornamental or park tree.

49403. DIOSPYROS KAKI L. f. Diospyraceæ.**Kaki.**

From Paotingfu, Chihli, China. Cuttings presented by H. W. Robinson,
American Board Mission. Received February 10, 1920.

Scions of the Japanese persimmon for propagation experiments in this country.

49404. SOLANUM sp. Solanaceæ.

From Ciudad Lerdo, Durango, Mexico. Tubers presented by Dr. Ellswood
Chaffey. Received March 2, 1920.

Wild potato tubers requested for experimental purposes.

49405. DATURA SANGUINEA Ruiz and Pav. Solanaceæ.

From Monterey, Calif. Seeds presented by H. A. Greene, Monterey Tree-
Growing Club. Received February 14, 1920.

"A large, treelike Peruvian plant, extending in its native land to altitudes where heavy frosts are encountered every night. It is somewhat smaller than *Datura arborea*, with smaller leaves and more narrowly tubular flowers. The corolla tube is green at the base, orange-yellow in the middle, and scarlet at the mouth." (*O. F. Cook.*)

For previous introduction see S. P. I. No. 41329.

49406. CHAMAEDOREA sp. Phœnicaceæ.**Pacayito.**

From Guatemala. Seeds collected by Wilson Popenoe, Agricultural Ex-
plorer for the Bureau of Plant Industry. Received February 14, 1920.

"(No. 271a. Tucuru, Alta Vera Paz. January 18, 1920.) *Pacayito*. See No. 271 [S. P. I. No. 49373] for notes. These seeds were collected from plants in the forest at Finca Los Alpes." (*Popenoe.*)

49407 and 49408.

From Mayaguez, Porto Rico. Seeds presented by T. B. McClelland, horti-
culturist, Agricultural Experiment Station. Received February 12, 1920.

49407. DESMANTHUS VIRGATUS (L.) Willd. Mimosaceæ.

A white-flowered woody plant, common in many places in the West Indies. The leaves, which are sensitive, are bipinnate, and the pods are linear-compressed. In Jamaica the brown polished seeds are used for beads. (Adapted from *Grisebach, Flora of the British West Indies*, p. 218, and *Lindley, Treasury of Botany*, vol. 1, p. 394.)

49408. MIMOSA CERATONIA L. Mimosaceæ.

A vinelike shrub, 2 to 5 meters high, found in many places in the West Indies. The branches and stems are covered with small recurved prickles, and the flowers are borne in globose heads. (Adapted from *Grisebach, Flora of the British West Indies*, p. 219.)

49409. AMYGDALUS DAVIDIANA (Carr.) Zabel. Amygdalaceæ.

(*Prunus davidiana* Franch.)

Peach.

From Sacaton, Ariz. Seeds presented by S. H. Hastings, director, Agricultural Experiment Station, through Prof. S. C. Mason, of the Bureau of Plant Industry. Received February 21, 1920.

"One of the trees of *Amygdalus davidiana* differed so strikingly from the others that I made special note of it. The top was more round and open, the

branches thicker, more rigid, and the small twigs thicker and shorter and decidedly less willowy than in the ordinary type. The leaves were broader than usual, less acuminate, and with coarser marginal serrations. The fruits were unusually large with flesh unusually thick and soft and of a more downy appearance than those of the usual type." (*Mason.*)

49410. RHEUM sp. Polygonaceæ.

Rhubarb.

From Tatsienlu, Szechwan, China. Seeds presented by Dr. C. Glass Davitt, College of Yale in China, Changsha, China. Received February 21, 1920.

"Tibetan wild rhubarb seed. Tatsienlu. West China. October, 1919." (*Davitt.*)

Obtained for breeding experiments.

49411. CYNODON INTERMEDIUS Rang. and Tad. Poaceæ. Grass.

From Coimbatore, Madras, India. Seeds presented by C. Tadulingam, assistant lecturing botanist, Agricultural College, through C. V. Piper, Bureau of Plant Industry. Received February 21, 1920.

A widely creeping perennial grass, rooting at the nodes; leafy, with slender erect or ascending flowering branches, which vary in length from 12 to 18 inches. The leaf blades are linear, flat, and up to 7 inches in length. This grass is a native of the Nilgiri Hills, southwestern India. It is intermediate between *Cynodon dactylon* and *C. barberi*, differing from the former principally in not having underground stems and from the latter in being more extensively creeping and with longer and more slender branches. (Adapted from *Journal of the Bombay Natural History Society*, vol. 26, p. 304.)

49412 to 49431. SOLANUM TUBEROSUM L. Solanaceæ. Potato.

From Edinburgh, Scotland. Tubers presented by the secretary, Board of Agriculture. Received February 25, 1920.

The following varieties are introduced for experiments being carried on by the Bureau of Plant Industry to obtain varieties resistant to the wart disease.

49412. *America.*

49422. *Lochar.*

49413. *Arran Comrade.*

49423. *Majestic.*

49414. *Arran Victory.*

49424. *Mauve Queen.*

49415. *The Bishop.*

49425. *May Queen.*

49416. *Dargill Early.*

49426. *Midlothian Early.*

49417. *The Duchess.*

49427. *Nithscale.*

49418. *Edsell Blue.*

49428. *Resistant Snowdrop.*

49419. *Epicure.*

49429. *Rhoderick Dhu.*

49420. *Immune Ashleaf.*

49430. *Sharpe's Express.*

49421. *Irish Queen.*

49431. *Tinwald Perfection.*

49432. SORBUS TORMINALIS (L.) Crantz. Malaceæ.

From Borde Hill, Cuckfield, Sussex, England. Plants presented by Col. Stephenson R. Clarke. Received February 25, 1920.

A fine large tree, native to southern and central Europe. The dark-green leaves, rather variable in shape and size, turn yellow and red in autumn, and the white flowers are borne in June in rather lax corymbs about 4 inches in diameter. The reddish yellow roundish fruits are sometimes eaten when very ripe. (Adapted from *Hempel and Wilhelm, Bäume und Sträucher*, vol. 3, p. 81, pl. 53.)

49433 to 49440. CORYLUS AVELLANA L. Betulaceæ. Filbert.

From Maidstone, England. Plants purchased from George Bunyard & Co. Received February 26, 1920. Quoted notes taken from Bunyard's Catalogue, 1915-16, p. 32.

49433. "*Cosford*. Nut almost round, large, most excellent flavor, and very thin shell. A prolific variety and recommended as a pollenizer for less fertile sorts."

49434. "*Duke of Edinburgh*. Nut large, oblong; shell rather thick; of excellent flavor."

49435. "*Early Prolific*. Curiously frizzled husk; nuts small but produced in large clusters, often 10 to a bunch; very early, sweet, and good. Sometimes called the Frizzled nut."

49436. "*Kentish*. Nut long, pointed, very sweet and delicate. Of great antiquity, having been grown in Kent for a long period. Has been almost superseded, on account of its infertility, by the *Kentish Cob*."

49437. "*Kentish Cob*. Nut large, broad, and long; excellent flavor; prolific; the best for all-round use. Almost exclusively grown in Kent for market."

49438. "*Kentish Cob*." [Nuts only were received of this variety.]

49439. "*Pearson's Prolific*. Nut round, short, good flavor; an abundant and early bearer; produces large quantities of catkins and is valuable for purposes of cross-fertilization."

49440. "*Webb's Prize Cob*."

49441. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Seeds presented by the director, Botanic Gardens. Received February 28, 1920.

This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a smooth, thick rind, rich red-purple in color. This rind incloses the pulp segments, five to seven in number, between snow white and ivory in color with the texture of a well-ripened plum and a most delicious flavor.

For previous introduction, see S. P. I. No. 47120.

49442. CEIBA PENTANDRA (L.) Gaertn. Bombacaceæ. Kapok.
(*Eriodendron anfractuosum* DC.)

From Buitenzorg, Java. Seeds presented by G. F. J. Bley. Received February 28, 1920.

"The kapok tree is widely distributed in the Tropics of both hemispheres and attains a height of 75 to 100 feet, with wide-spreading horizontal branches. When about 5 years old it begins to bear pods with kapok down, the yield increasing with the age of the tree. Well-developed trees yield annually about 7,000 pounds per acre under favorable conditions. Kapok is excellent for pillows, mattresses, life preservers, etc., and its use is constantly increasing." (L. H. Dewey.)

For previous introduction, see S. P. I. No. 46522.

49443 to 49456.

From Guatemala. Seeds collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received February 28, 1920. Quoted notes by Mr. Popenoe.

49443 to 49456—Continued.

49443. ALPINIA sp. Zinziberaceæ.

"(No. 282a. Tucuru, Alta Vera Paz. January 19, 1920.) From Chama, Alta Vera Paz. A plant which resembles *Alpinia nutans* in foliage and produces close to the ground large numbers of bright-red fruits about an inch long, containing small hard seeds surrounded by a mucilaginous pulp, much used by the Kekchi Indians as an ingredient of soups and stews. Kekchi name *tzih*."

49444. AMARANTHUS sp. Amaranthaceæ.

"(No. 283a. Tucuru, Alta Vera Paz. January 19, 1920.) From the Finca Mocca; altitude 3,500 feet. An annual cultivated in Alta Vera Paz for its small black seeds, which are toasted and ground and used to make sweetmeats. The plant grows about 3 feet high and bears crimson flower heads."

49445. GYNANDROPSIS SPECIOSA (H. B. K.) DC. Capparidaceæ.

"(No. 281a. Tucuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. An annual about 3 feet high with red flowers."

49446. HOMOLEPIS ATURENSIS (H. B. K.) Chase. Poaceæ. Grass.
(*Panicum aturense* H. B. K.)

"(No. 273a. Tucuru, Alta Vera Paz. January 19, 1920.) A good pasture grass from the Finca Los Alpes; altitude 3,000 feet. It grows about 15 inches high and is said to be very nourishing."

49447. ISACHNE ARUNDINACEA (Swartz) Griseb. Poaceæ. Grass.

"(No. 274a. Tucuru, Alta Vera Paz. January 19, 1920.) A pasture grass from Finca Mocca; altitude about 3,500 feet. Perhaps too tough to be of great value. It grows about 2 feet high."

49448. LASIACIS OAXACENSIS (Steud.) Hitchc. Poaceæ. Grass.
(*Panicum oaxacense* Steud.)

"(No. 277a. Tucuru, Alta Vera Paz. January 19, 1920.) A tall grass (about 4 feet) from the Finca Mocca. It makes abundant foliage and loose heads of large seeds."

49449. MANDEVILLA AURICULATA (Pohl.) Schum. Apocynaceæ.

"(No. 279a. Tucuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. A climbing plant from Chama, Alta Vera Paz, reaching a height of 30 feet. Its flowers are funnel shaped, 2 inches across the top, and creamy white with a strawberry-red throat."

49450. PANICUM GLUTINOSUM Swartz. Poaceæ. Grass.

"(No. 276a. Tucuru, Alta Vera Paz. January 19, 1920.) A grass found in the edges of the coffee plantation at Finca Mocca. It grows about 4 feet high."

49451. PASPALUM VIRGATUM L. Poaceæ. Grass.

"(No. 275a. Tucuru, Alta Vera Paz. January 19, 1920.) A tall grass from Finca Los Alpes. It makes coarse leaves and produces large heads of seed. It is not considered as good as some other grasses in this region."

For previous introduction, see S. P. I. No. 47050.

49452. PASSIFLORA SERRATIFOLIA L. Passifloraceæ.

"(No. 278a. Tucuru, Alta Vera Paz. January 19, 1920.) A vigorous climber from the hot country (low altitudes), producing round fruits

49443 to 49456—Continued.

up to 2 inches thick, lemon yellow, with translucent whitish flesh, which is subacid and of fairly pleasant flavor. The seeds are shaped like diminutive arrowheads. Presented by Harry Johnson."

49453. *SOLANUM SEAFORTHIANUM* Andrews. Solanaceæ.

"(No. 285a. Tucuru, Alta Vera Paz. January 19, 1920.) A climbing plant from the forest in the Finca Mocca, at an altitude of about 3,000 feet. It becomes about 20 feet in height, making slender stems and graceful foliage, and bears white flowers followed by decorative fruits, which are round, half an inch in diameter, and bright orange-red."

49454. *INDIGOFERA* sp. Fabaceæ.

"(No. 284a. Tucuru, Alta Vera Paz. January 19, 1920.) A small leguminous plant of semicreeping habit from the Finca Los Alpes; altitude 3,000 feet. It makes stems about 3 feet long and bears terminal spikes of salmon-pink flowers."

49455. *VALOTA INSULARIS* (L.) Chase. Poaceæ.

Grass.

"(No. 286a. City of Guatemala. February 3, 1920.) A grass cultivated near El Progreso, in the hot country between the city of Guatemala and Zacapa. It grows to 6 or 7 feet in height, makes abundant foliage, and appears to be a good forage plant."

For previous introduction, see S. P. I. No. 47057.

49456. (Undetermined.)

"(No. 280a. Tucuru, Alta Vera Paz. January 19, 1920.) Presented by Harry Johnson. An herbaceous perennial from Chama, Alta Vera Paz, growing about a foot high and producing spikes of red flowers."

49457. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. **Tomato,**

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received March 2, 1920.

"Seeds of a cross between the wild species and *Earliana*." (Westgate.)

49458. *ASPARAGUS ACUTIFOLIUS* L. Convallariaceæ.

From Hartsville, S. C. Seeds collected by J. B. Norton, Agricultural Explorer for the Bureau of Plant Industry. Received March 2, 1920.

"This is probably the hardiest evergreen species of the genus. Stock grown from S. P. I. No. 34620 has survived four winters at Hartsville, S. C., when the temperature has gone below 10° F. It makes a beautiful thickset hedge of a very dark green color, suggesting a fine-leaved juniper. As the plants grow older there is a tendency to produce vinelike shoots. The tuberlike storage roots and drought-resistant foliage make it valuable for regions of scanty rainfall. The shoots are edible, although much smaller than those of ordinary asparagus. The flavor, however, is said by some to be superior to that of the common species." (Norton.)

49459 to 49471.

From Kafue, Northern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 2, 1920. Quoted notes by Doctor Shantz.

49459. *BRACHYSTEGLIA* sp. Cæsalpiniaceæ.

"(No. 300. Bolenga Camp. November 25, 1919.) *Mombo* (Chimyanja). A large, spreading acacialike plant with large pods and large flat seeds,

49459 to 49471—Continued.

which are eaten by baboons and natives. The bast fiber was formerly used to make cloth; now used whenever fiber is required. A most useful as well as ornamental tree."

49460. *CAESALPINIA* sp. *Cæsalpiniaceæ*.

"(No. 299. Bolenga Camp. November 25, 1919.) *Uteta* (Chimyanja). A small tree not over 10 feet high, bearing large pods, the beans of which are eaten after four successive boilings; the water is thrown off each time. The beans are said to kill if eaten after one boiling."

49461. *CARYOPHYLLUS JAMBOS* (L.) Stokes. *Myrtaceæ*. Rose-apple.
(*Eugenia jambos* L.)

"(No. 318. Kafue. December 4, 1919.) *Musafa* (in Mashakalumbwe and in Chimyanja). A beautiful light lemon-green fruit 1 inch in diameter, with a most agreeable spicy flavor; the seeds are large and the pulp firm and crisp. This fruit is said to taste something like *Jambosa malaccensis*; it is also very attractive in appearance."

For previous introduction, see S. P. I. No. 44891.

49462. *GARCINIA LIVINGSTONEI* T. Anders. *Clusiaceæ*.

"(No. 324. Kafue. December 6, 1919.) *Munkononga* (Chimyanja) or *mutungu* (Mashakalumbwe). A very excellent fruit to eat out of hand. The stone, or rather the embryo, easily dries out. The tree is very productive and has handsome foliage and fruit."

Plate IV shows a fruiting branch of this tree.

49463 and 49464. *HOLCUS SORGHUM* L. *Poaceæ*. Sorghum.
(*Sorghum vulgare* Pers.)

49463. "(No. 313. Kafue. December 4, 1919.) An early-maturing kafir."

49464. "(No. 314. Kafue. December 4, 1919.) A later but better type of kafir."

49465. *PROTEA ABYSSINICA* Willd. *Proteaceæ*.

"(No. 336. Kafue. December 7, 1919.) A large white *Protea* which grows on poor soil. The flowers are reddish in color and very attractive. 2 to 3½ inches across. This and other *Proteas*, while attractive in flower and foliage, hold the old seed heads for several years, and this often gives them a half-dead appearance."

49466. *UAPACA SANSIBARICA* Pax. *Euphorbiaceæ*.

"(No. 295. Bolenga Camp. November 25, 1919.) The popular wild fruit *mahobohobo*; also called *masuku* or *massigou*. The tree has broad, leathery evergreen leaves, and the brownish yellow clusters of fruit are produced mainly on the old wood. When very ripe the fruit is sweet, but it is like a persimmon when not fully mature."

For previous introduction, see S. P. I. 32394.

49467. *XIMENIA AMERICANA* L. *Olacaceæ*. False sandalwood.

"(No. 309. Kafue. December 4, 1919.) *Impinji*, similar to No. 301 [S. P. I. No. 49602], but a larger fruited form. The fruits are fairly edible if the skin and stone are both rejected; they are borne in abundance and look like *Prunus americana*, but are red and have a large stone. The seed is pounded to obtain the much-prized oil."

For previous introduction, see S. P. I. No. 42896.

49459 to 49471—Continued.**49468. ZEA MAYS L. Poaceæ.****Corn.**

"(No. 312. Kafue. December 4, 1919.) This corn is grown by the natives south of the Kafue River and is said to be a small early-maturing type. It is planted in December, when the rains come."

49469. (Undetermined.)

"(No. 345. Kafue. December 7, 1919.) A small tree, called *m'seche* in Chimyanja, with very attractive white flowers. The fruit, which has the odor of a lychee, is said to be eaten, and the hulls are used in making rattles for dancing."

49470. (Undetermined.)

"(No. 293. Bolenga Camp. November 25, 1919.) *M'fwefee* (Chimyanja). A small tree said to bear very sweet edible fruits, which are small, oval, and green with white spots."

49471. (Undetermined.)

"(No. 337. Kafue. December 7, 1919.) *M'tantanvara* (Chimyanja). A small black fruit resembling a small wild cherry. It is eaten by the natives and dries on the tree much like our *Prunus melanocarpa*."

49472 and 49473.

From Santiago de las Vegas, Cuba. Seeds presented by Dr. Mario Calvino, Agricultural Experiment Station. Received March 5, 1920.

49472. CARICA PAPAYA L. Papayaceæ.**Papaya.**

"Seed of a variety of *Carica papaya* which I received from the cold regions of Colombia; that is, from high altitudes. I think this variety would grow and fruit in California." (*Calvino*.)

49473. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

A graceful little tree, native to the Andean region of South America, where it is cultivated up to an altitude of 9,000 feet for the sake of its edible fruit. The fruits are smaller and sweeter than those of *C. papaya*, are about 9 inches long, with soft, white flesh, sometimes very acid in cool regions. The outside is of a bright golden yellow. (Adapted from *Curtis's Botanical Magazine*, pl. 6198.)

49474. PITTOSPORUM CRASSIFOLIUM Soland. Pittosporaceæ.

From San Francisco, Calif. Seeds presented by John McLaren, superintendent, Golden Gate Park. Received March 9, 1920.

"An evergreen tree introduced from Australia, its native land. It is of easy culture, not particular as to soil, and is very effective as a lawn ornamental, either single or in groups; it also makes a good hedge plant. It is propagated by seeds." (*McLaren*.)

Mr. McLaren recommends this shrub as one which will probably endure the sea breeze and salt spray of the Florida coast.

49475. PASSIFLORA EDULIS Sims. Passifloraceæ.**Granadilla.**

From Tangier, Morocco. Seeds presented by J. Goffart. Received March 10, 1920.

"The passion vine is extensively grown in Australia and thrives in the warmer portions of the United States, although not yet well known. The fruit is the size and shape of an egg and contains a pulp of exceedingly good flavor; this is eaten with a spoon after cutting off one end of the fruit. The pulp is also

used as a flavoring for cakes, ice cream, and drinks and in fruit salads. The vine grows well in any ordinary open soil with abundant fertilizer. The rich green foliage is very ornamental." (*F. O. Popenoe.*)

For previous introduction, see S. P. I. No. 44854.

49476. BACTRIS MARAJA Mart. Phœnicaceæ.

Palm.

From Bahia, Brazil. Seeds presented by H. M. Curran. Received March 2, 1920.

"(Bahia. December, 1919.) A palm said to grow in a swamp; has a spiny stem and produces clusters of edible dark-purple fruits resembling grapes in appearance and flavor. The fruits are very common in the markets in Ilheos, where these were obtained; they are called 'manvel velho,' or swamp coconut." (*Curran.*)

49477 to 49479.

From Kafue, Northern Rhodesia. Collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 5, 1920. Quoted notes by Dr. Shantz.

49477. AULOTANDRA sp. Zinziberaceæ.

"(No. 320. December 4, 1919.) Roots of a beautiful orchidlike plant which forms a spike about 6 inches high, upon which one flower appears at a time. The flowers, about 2 to 3 inches across, have pale-yellow centers with the edges white to lavender or reddish lavender. They open in the morning and last most of the day. The swollen roots have a delicate flavor and are aromatic."

49478. AULOTANDRA sp. Zinziberaceæ.

"(No. 321. December 4, 1919.) Roots of a delicate Aulotandra with a lacelike pure-white flower with a touch of yellow in the center, which opens in the early evening and fades as soon as the sun strikes it the next day. Only one flower is pushed up at a time. Like the preceding number [No. 49477] but more delicate, and the spike remains under the ground."

49479. LISSOCHILUS ARENARIUS Lindl. Orchidaceæ.

"(No. 322. December 4, 1919.) Tubers of a beautiful land or soil orchid with a spike $1\frac{1}{2}$ to $2\frac{1}{2}$ feet high, bearing beautiful lavender flowers. The flower spike appears in advance of the leaves. This is one of the most attractive orchids I have seen."

49480. DIOSPYROS EBENASTER Retz. Diospyraceæ. Black sapote.

From Salina Cruz, Oaxaca, Mexico. Seeds presented by Wilbur Barker. Received March 9, 1920.

"The black sapote, which is native to Mexico, is a compact and shapely ornamental tree with oblong-oval glossy leaves about 4 inches long. The fruits, which greatly resemble those of the kaki, or Japanese persimmon, are light green when ripe and from 2 to 4 inches in diameter. The dark-brown or almost black flesh is sweet and when cut up or mashed with orange juice makes a first-rate dish." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44187.

49481. PROSOPIS STEPHANIANA (Bieb.) Kunth. Mimosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received March 9, 1920.

"Ayaba, south of Biskra, Algeria." (*Trabut.*)

A shrubby plant, 1 to 2 feet in height, found from the eastern Mediterranean countries to the Caucasus and northern Africa. The branches and petioles are pubescent, and the compound leaves are composed of 4 to 5 pairs of leaflets, with 8 to 12 pairs of pinnæ in each leaflet. The thick pods are ovoid-oblong. (Adapted from *Boissier, Flora Orientalis*, vol. 2, p. 633.)

For previous introduction, see S. P. I. No. 32728.

49482. CUCURBITA PEPO L. Cucurbitaceæ.

Squash.

From Colon, Canal Zone, Panama. Presented by A. MacIlvane, American consulate. Received March 10, 1920.

"Taboquilla squash seeds." (*MacIlvane*.)

49483. PRUNUS BESSEYI Bailey. Amygdalaceæ.

Sand cherry.

From Brookings, S. Dak. Seedlings presented by N. E. Hansen, professor of horticulture, South Dakota State College of Agriculture and Mechanic Arts. Received March 12, 1920.

"Sand-cherry seedlings of western South Dakota stock. They have been under cultivation at this station for several plant generations." (*Hansen*.)

49484 to 49488.

From Richmond, Victoria. Seeds presented by F. H. Baker. Received March 13, 1920. Quoted notes by Mr. Baker.

49484. ACACIA CULTRIFORMIS A. Cunn. Mimosaceæ.

"Panton Hill; rare."

A shrubby acacia from Australia with sharp-pointed, simple, whitish leaves and small headlike racemes of yellow flowers. Although it does not exceed 10 feet in height it makes a very elegant ornamental. (Adapted from *Revue Horticole*, vol. 68, p. 503.)

For previous introduction, see S. P. I. No. 48039.

49485. ACACIA PYCNANTHA Benth. Mimosaceæ.

"Panton Hill district."

An Australian shrub with long, narrow, curved leaves and numerous large flower heads, which are borne in terminal panicles. In its native country the bark of this shrub is valued for its large percentage of tannin. (Adapted from *Revue Horticole*, vol. 68, p. 504.)

For previous introduction, see S. P. I. No. 48059.

49486. ACACIA RETINODES Schlecht. Mimosaceæ.

"A very good wattle."

An acacia, native to Australia, with elongated leaves up to 6 inches in length and elegant terminal panicles of odorous flower heads. It is said to flower in France almost throughout the year. (Adapted from *Revue Horticole*, vol. 68, p. 505.)

For previous introduction, see S. P. I. No. 38758.

49487. KENNEDYA RUBICUNDA (Schneev.) Vent. Fabaceæ.

(*Glycine rubicunda* Schneev.)

A shrubby, twining plant, native to New South Wales. It runs up to a height of 5 or 6 feet or more, producing an abundance of large showy dark-red flowers of a somewhat dingy appearance. The plant is easily propagated by seeds, which should be soaked in warm water for a few hours before planting. (Adapted from *Curtis's Botanical Magazine*, pl. 268.)

For previous introduction, see S. P. I. No. 39873.

49484 to 49488—Continued.

49488. *TECOMA SMITHII* W. Wats. Bignoniaceæ.

"Shrub with yellow blooms; about 5 feet high."

A beautiful shrubby plant, said to have been produced in Australia as a cross between *Tecoma capensis* and *T. mollis*. The flowers have orange tubes and yellow segments and are borne in large compound panicles. (Adapted from *Gardeners' Chronicle*, 3d, ser., vol. 14, p. 649.)

49489 to 49495.

From Arlington, Va. Seedlings grown at the Arlington Experimental Farm, Va., by M. B. Waite and H. W. Truesdell. Numbered March 15, 1920. Quoted notes by Mr. Truesdell.

49489. *PYRUS* sp. Malaceæ.

Pear.

"(Row 1, tree 13.) Fruit: Size medium, 2 to 2½ inches in diameter; form regular, globose; stem medium stout, inserted in a pronounced cavity; skin thin, fairly smooth; dots brownish, numerous; color yellow, sometimes with red blush; flesh juicy, firm, fine grained; flavor mild; dessert quality good; ripe September 1 to 15. Earlier, smaller, finer grained, more tender, and slightly better in quality than the Kieffer variety.

"Tree: Large, vigorous, of hybrid-oriental pear character; bark dark gray, branches spreading, foliage dark, abundant, 1½ by 2½ inches (average); very productive; blight resistant.

"When in very rapid growth blight occasionally goes 6 to 12 inches down the shoots. Apparently less susceptible than the Kieffer variety."

49490. *PYRUS* sp. Malaceæ.

Pear.

"(Row 2, tree 15.) Fruit: Size medium, 2 to 2½ inches in diameter; form obovoid to slightly pyriform; stem medium length, moderately stout, set in a shallow cavity; skin rather thick, medium smooth, very finely russeted; color greenish brown with a red blush; flesh juicy, firm, fine grained; flavor rich, very sweet; dessert quality best; ripe September 10 to 20.

"Distinctly like the Seckel pear in flavor, texture, and color, but larger and with more red blush and even thicker and more sirupy juice.

"Tree: Medium size and vigor, Seckellike; branches slightly spreading; bark light red; foliage fairly abundant, medium green, 1½ by 2¼ inches (average); has not produced heavily; rather blight resistant.

"One blight infection has occurred, girdling the leader in the top of the tree and causing removal about this point. No other blight was seen on this tree, in spite of severe pruning and vigorous twig tips. Probably equal or superior to the Seckel and Kieffer varieties in blight resistance."

49491. *PYRUS* sp. Malaceæ.

Pear.

"(Row 22, tree 15.) Fruit: Size medium, 2 by 2¾ inches in diameter; form broadly obovoid; stem short, moderately stout, set in a very slight depression; skin thin; color light yellow; flesh very juicy, fine grained; flavor moderately sweet; dessert quality good; ripe September 10 to 20.

"Tree: Large, vigorous; bark reddish; branches spreading or drooping; foliage abundant, light green, 1½ by 1¾ inches (average); apparently productive; very blight resistant (no blight observed); somewhat susceptible to San Jose scale."

49489 to 49495—Continued.**49492. PYRUS sp. Malaceæ.****Pear.**

"(Row 37, tree 2.) Fruit: Size medium; pyriform, with distinct neck; stem slender, $1\frac{1}{2}$ inches long; skin thin, smooth; color golden yellow; flesh fine grained, juicy, buttery, melting; flavor subacid; dessert quality good to very good; ripe August 25 to September 1.

"Tree: Large, vigorous, of European pear character; bark light gray; branches somewhat spreading; foliage abundant, light green, three-fourths of an inch by 1 inch (average); has not produced heavily; very resistant to blight (no blight observed)."

49493. PYRUS sp. Malaceæ.**Pear.**

"(Row 38, tree 26.) Fruit: Size medium, $2\frac{1}{2}$ by 3 to $3\frac{1}{4}$ inches; pyriform with a tendency to obconic, neck distinct; stem rather thick, about three-fourths of an inch long; skin thin, smooth, dots numerous, small; color yellow with crimson cheek, sometimes covering entire surface; flesh fine grained, melting; dessert quality good; ripe August 10 to 20.

"Tree: Size moderately large and rather vigorous; bark brown; branches rather spreading; foliage moderately abundant, medium green; has not produced heavily; very resistant to blight (no blight observed)."

49494. PYRUS sp. Malaceæ.**Pear.**

"(Row 1, tree 10.) Fruit: Size medium; $2\frac{1}{2}$ by $2\frac{1}{2}$ inches; form regular, obconic; stem stout, 1 inch long, base fleshy, inserted in a broad shallow cavity; skin rough, rather thick, tender; dots few, large; color yellow; flesh juicy, soft, rather fine grained, melting; flavor rather sweet; dessert quality good; ripe about October 1.

"Tree: Large, vigorous; bark light brown; branches somewhat spreading; foliage abundant, rather dark; productive; blight resistance about the same as the Kieffer variety."

49495. PYRUS sp. Malaceæ.**Pear.**

"(Row 36, tree 4.) Fruit: Size medium, 2 inches in diameter by $2\frac{1}{2}$ inches in length; pyriform; stem medium stout, seven-eighths of an inch long, inserted in a very small cavity; skin thin, tender, smooth, glossy, waxy; dots numerous, inconspicuous; three-fourths of the surface covered with crimson, the rest light yellow; flesh medium juicy, firm, fine grained, mild; dessert quality fair to good; ripe August 10 to 20.

"Tree: Medium size and vigor, of European pear character; bark reddish brown; branches rather upright; foliage not abundant, light green, 1 by $1\frac{1}{2}$ inches (average); has not been productive; blight resistant (observed only on forced top grafts)."

49496. DIOSCOREA ALATA L. Dioscoreaceæ.**Greater yam.**

Grown for several years at the Plant-Introduction Field Station, Brooksville, Fla. Numbered March 25, 1920, for convenience in recording distribution.

"A yam obtained from O. P. Wernicke, Brooksville, Fla., who brought it from Avon Park, Fla., where he had grown it in light sandy soil with much success. This yam has a high water content, and when cut into pieces, boiled, and mashed it is easily beaten to a light, creamy consistency without the addition of milk. This is considered to be the best method of preparing this type of yam for the table, and when it is so prepared it is scarcely distinguishable from mashed potato." (R. A. Young.)

49497. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Kampala, Uganda. Seeds presented by L. Hewett, acting Director of Agriculture, Uganda Protectorate, through Prof. C. V. Piper. Numbered March 20, 1920.

"A red-seeded variety of sorghum grown by the Nubians along the Kongo."
(H. N. Vinall.)

49498 to 49501. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Ibadan, Nigeria. Seeds presented by A. H. Kirby, acting Director of Agriculture, Southern Nigeria, through Prof. C. V. Piper. Numbered March 20, 1920. Quoted notes by H. N. Vinall.

49498. "A variety with flat light-red seed. Native name *Aha Bawa*."

49499. "A variety with white flat seed similar to the variety formerly grown in the United States under the name 'Jerusalem corn.' Native name *Farafara*."

49500. "A pink-seeded variety. Native name *Karwa-prin-sosia*."

49501. "A variety with seed similar to those of *Aha Bawa* [S. P. I. No. 49498], but somewhat smaller and deeper red. Native name not known."

49502 to 49504. HOLCUS SORGHUM L. Poaceæ.**Sorghum.***(Sorghum vulgare Pers.)*

From Kampala, Uganda. Seeds presented by L. Hewett, acting Director of Agriculture, Uganda Protectorate, through Prof. C. V. Piper. Numbered March 20, 1920. Quoted notes by H. N. Vinall.

49502. "A variety with small dark-red seed, like those of Sumac sorgo. This is probably a sweet-stemmed variety. Native name *Namatera*."

49503. "A variety with small dark-red seed, like *Namatera* [S. P. I. No. 49502]. The seeds appear almost identical. Native name *Kaini*."

49504. "A variety with small dark-red seed, very much like *Namatera* [S. P. I. No. 49502] and *Kaini* [S. P. I. No. 49503], but with a shallow dent in the blossom end of the seed. Native name *Kakoba Kamnubai*."

49505. PHYLLOSTACHYS PUBERULA NIGRA (Lodd.) Houzeau. Poaceæ.*(P. nigra Munro.)***Bamboo.**

From Niles, Calif. Plants presented by the California Nursery Co. Received April 17, 1920.

"The black bamboo is one of the important cultivated species in Japan, although it is smaller than the other timber sorts, seldom growing over 20 feet and 1½ inches in diameter.

"The culms when young are covered with dark-brown to purple spots which spread as it grows older until the whole culm becomes dark brown, almost black, except just below the nodes, where there is an ash-gray line. This dark color at once distinguishes the species from all other Japanese bamboos.

"This is one of the hardiest forms grown in England and is certainly one of the most decorative kinds.

"The uses of this species are limited to the manufacture of furniture, numerous household articles, and fancy fishing poles, for all of which these black bamboos are peculiarly fitted." (David Fairchild.)

49506 to 49521.

From Poona, Bombay Presidency, India. Seeds presented by Dr. William Burns, economic botanist, Bombay Department of Agriculture. Numbered March 26, 1920.

49506. *ANDROPOGON CARICOSUS* L. Poaceæ. Grass.

A grass with erect stems, forming tufts at the rooting nodes of the creeping base. The linear leaves are 6 to 8 inches long and the racemes are pale green or silvery. Native to tropical Asia and Madagascar. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 987.*)

For previous introduction, see S. P. I. No. 41886.

49507. *ANDROPOGON CARICOSUS* L. Poaceæ. Grass.

Received as *Andropogon annulatus*.

49508. *ANDROPOGON PACHYARTHURUS* Hack. Poaceæ. Grass.

An annual grass with linear glabrous leaves and slender stems, 6 to 18 inches high, suberect and decumbent below. Native of the East Indies and Dekkan, India. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 976.*)

Received as *Andropogon pumilus*.

49509. *ANDROPOGON PURPUREO-SERICEUS* Hochst. Poaceæ. Grass.

A robust annual grass with smooth and polished erect stems 3 to 4 feet high, and linear leaves 8 to 10 inches long. Native to Abyssinia. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 984.*)

For previous introduction, see S. P. I. No. 41891.

49510. *ANDROPOGON PERTUSUS* (L.) Willd. Poaceæ. Grass.

A perennial grass native to southern Asia and tropical and sub-tropical Australia. One of the best grasses to withstand long droughts; while it will bear any amount of feeding. It endures cold better than some other Queensland Andropogons, and though not so palatable to pasture animals as some other grasses it is valuable for the summer season, when many others fail in the arid interior. It is of inferior value where the best English grasses can be grown; it is even apt to strangle them. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 42.*)

For previous introduction, see S. P. I. No. 34046.

49511. *ANDROPOGON TRINII* Steud. Poaceæ. Grass.

(*A. monticola trinii* Hooker.)

A perennial grass with slender culms, 1 to 3 feet high, in dense tufts and with spreading branches at length erect. Native to India, the East Indies, and tropical Africa. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 7, p. 349.*)

Received as *Andropogon monticola*.

49512. *APLUDA ABISTATA* Torner. Poaceæ. Grass.

A creeping perennial grass, commonly found in hedges or other shady places in the plains of northern India and in the Himalayas, ascending to 7,000 feet in altitude. It is used for fodder in the Banda district. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 272.*)

Received as *Andropogon varia*.

For previous introduction, see S. P. I. No. 41892.

49506 to 49521—Continued.

49513. *BRACHIARIA ERUCIFORMIS* (J. E. Smith) Griseb. Poaceæ. Grass.
(*Panicum isachne* Roth.)

A grass from the plains of India and from watery places at altitudes of 6,000 feet in Kashmir and the Punjab to Bengal and southward to Ceylon. The slender much-branched stems are 1 to 2 feet high, with bearded nodes and softly hairy or glabrous leaves. (Adapted from *Hooker, Flora of British India, vol. 7, p. 28.*)

For previous introduction, see S. P. I. No. 32429.

49514. *CENCHRUS BIFLORUS* Roxb. Poaceæ. Grass.

A grass with simple stems, 6 to 24 inches long, and linear-lanceolate leaves 3 to 10 inches long; native to the East Indies. (Adapted from *Cooke, Flora of Bombay, vol. 2, p. 917.*)

For previous introduction, see S. P. I. No. 41894.

49515. *CHLORIS PARAGUAIENSIS* Steud. Poaceæ. Grass.

"A perennial grass native to India, Burma, and Ceylon, but now widespread in the Tropics. According to Duthie it is considered in northern India a good fodder grass up to the time of flowering, after which time cattle will not touch it. In Australia it is considered one of the best grasses for pasturage and hay. An earlier test in this country with S. P. I. No. 36255 did not indicate that it is of much value." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 41897.

49516. *COIX LACRYMA-JOBI* L. Poaceæ. Job's-tears.

This plant, native to southern Asia, New Guinea, and Polynesia, is cultivated for food by the eastern hill tribes of India and supplies a staple article of diet to the Tankhul Nagas of Manipur; it is also grown in Burma. The form cultivated for food has an easily breakable, deeply furrowed shell, that of the wild plant being extremely hard and shining. Seeds require long soaking before they are sown. The plant thrives best under humid conditions. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 135.*)

For previous introduction, see S. P. I. No. 48012.

49517. *DINEBRA ARABICA* Jacq. Poaceæ. Grass.

A laxly cespitose, somewhat rigid annual, branched from the base, with the culms sometimes prostrate, sometimes ascending or obliquely erect, 1 to 18 inches long. Plentiful, but in few localities, on plains flooded in the rainy season between Loanda and Quicuxe, or in damp groves or in drying-up ponds. Native to tropical Africa and the East Indies. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, vol. 2, pt. 1, p. 223.*)

For previous introduction, see S. P. I. No. 41902.

49518. *ISCHAEMUM CILIARE* Retz. Poaceæ. Grass.

"One form of this grass is harvested in and near Colombo, Island of Ceylon, and is extensively brought into town as fodder for cattle. It is well known as the *Rat-tena*, literally 'red-grass,' of the Singhalese." (*Trimen, Handbook of the Flora of Ceylon, vol. 5, p. 216.*)

A grass with stems 6 inches to 2 feet long, slender or sometimes stout, erect or sometimes creeping, and with leaves 2 to 6 inches long. Native to Bengal, the lower Himalayas, and Ceylon. (Adapted from *Hooker, Flora of British India, vol. 7, p. 133.*)

49506 to 49521—Continued.

49519. *ISCHAEMUM SULCATUM* Hack. Poaceæ. Grass.

A grass, native to India, with slender stems, 8 to 18 inches long, and with leaves 2 to 10 inches long. It is very nutritious and is largely used as fodder wherever it occurs in abundance. It grows along the edges of cultivated land in the black soil of central India, where it is known as *Pownia* or *Pona*. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 7, p. 137.)

For previous introduction, see S. P. I. No. 41912.

49520. *ISEILEMA ANTHEPHOROIDES* Hack. Poaceæ. Grass.

A stout, tufted grass, less than 3 feet high, with erect or ascending stems, linear leaves, and crowded leafy panicles. Native to the southern Dekkan Peninsula. (Adapted from Hooker, *Flora of British India*, vol. 7, p. 219.)

An annual grass, one of the most valuable forest fodder grasses in the Indian peninsula. (Adapted from the *Agricultural Journal of India*, vol. 12, *Special Indian Scientific Number*, p. 135.)

For previous introduction, see S. P. I. No. 41913.

49521. *PENNISETUM CILIARE* (L.) Link. Poaceæ. Grass.
(*P. cenchroides* Rich.)

Dhaman. A perennial, spreading, fodder grass, adapted to desert regions, and native to tropical Africa and subtropical southwestern Asia. It is well adapted for silage, green fodder, and hay, and is so nutritious as to have led to the native saying: "What ghi (or ghee, i. e., clarified butter) is to man, that the *dhaman* is to a horse." (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 364.)

For previous introduction, see S. P. I. No. 41915.

49522 to 49524. *DIGITARIA EXILIS* (Kippist) Stapf. Poaceæ. Fundi.

From Mano, Sierra Leone, West Africa. Seed presented by D. W. Scotland, Director of Agriculture, Njala, Mano, Sierra Leone, through Prof. C. V. Piper. Numbered March 26, 1920.

A cereal native to tropical Africa and cultivated in West Africa, where it was first observed in 1798. It closely resembles *Digitaria longiflora*, which is probably the wild ancestral form. The grain has a very good flavor, and it is believed that if it were exported to Europe it might prove a valuable addition to the light farinaceous articles of food used by the delicate or convalescent. The plant is said not to require manuring and to thrive well in light soils and even in rocky situations. It is grown in Nigeria at an elevation of 4,000 feet. (Adapted from *Kew Bulletin of Miscellaneous Information*, No. 8, p. 383, 1915.)

49522. Light type.

49524. Medium type.

49523. Heavy type.

49525 and 49526.

From Buitenzorg, Java. Tubers presented by the director of the Botanic Gardens. Received February 7, 1920.

49525. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

"*Tallus belang*, or *tallus soerat*. This is a yellow-fleshed taro. The meaning of the vernacular names is said by Dr. P. J. S. Cramer to be 'striped taro.'" (R. A. Young.)

49525 and 49526—Continued.

49526. *XANTHOSOMA SAGITTAEFOLIUM* (L.) Schott. Araceæ. **Yautia.**
 “*Kiempoel poetieh*. Introduced for testing in the South.” (R. A. Young.)

49527 to 49567.

From Honolulu, Hawaii. Seeds collected by J. F. Rock and sent through Dr. H. L. Lyon, department of botany and forestry, Hawaiian Sugar-Planters' Association. Received February 19, 1920.

“All of the seeds, except those of No. 963, were collected on Mount Gedeh, Java, in July and August, 1919.” (Lyon.)

49527. *AMOMUM COCCINEUM* (Blume) Benth. and Hook. Zinziberaceæ.
 (*Elettaria coccinea* Blume.)

(No. 929.) A perennial herb, native to the more humid portions of Java, with narrowly acuminate leaves and oblong dense spikes of flowers. (Adapted from *Blume, Enumeratio Plantarum Javæ*, p. 53.)

49528. *ARECA* sp. Phœnicaceæ. **Palm.**

(No. 933.) A palm characterized by its lofty trunk, pinnate leaves, whose stalks are rolled up into cylinders at the bases, and drupelike fruits with fibrous rinds. (Adapted from *Lindley, Treasury of Botany*, vol. 1, p. 88.)

49529. *CALOPHYLLUM HASSKARLII* Teijsm. and Binn. Clusiaceæ.

(No. 795.) A tree up to 20 meters in height, found throughout the East Indies, but rare in Java. In southern Preanger, Java, the wood is renowned as building material. (Adapted from *Heyne, Nuttige Planten van Nederlandschindië*, vol. 3, p. 267.)

For previous introduction, see S. P. I. No. 11021.

49530. *CYRTOSTACHYS LAKKA* Beccari. Phœnicaceæ. **Palm.**

(No. 693.) A stately and elegant palm, native to the East Indies, with a slender spineless stem crowned by a cluster of boldly arched leaves 3 to 4 feet in length. The fruits are elongate egg-shaped and about half an inch long. (Adapted from *Beccari, Annales du Jardin Botanique de Buitenzorg*, vol. 2, p. 141, and *Bailey, Standard Cyclopædia of Horticulture*, vol. 2, p. 947.)

For previous introduction, see S. P. I. No. 46865.

49531. *DIANELLA ENSIFOLIA* (L.) Red. Liliaceæ.

(No. 800.) A very attractive member of the lily family from tropical Asia, with long grasslike leaves, lax panicles of blue or white flowers, and globose blue fruits which remain on the plant for some time after maturing. (Adapted from *Curtis's Botanical Magazine*, pl. 1404.)

49532. *DRYMOPHLOEUS PROPINQUUS* Beccari. Phœnicaceæ.

(No. 752.) A rather small palm, native to New Guinea, with a stem up to 2½ meters in height and 2 centimeters thick. The leaves, about a meter and a half long, are irregularly pinnate with pinnæ about 30 centimeters in length. (Adapted from *Beccari, Malesia*, vol. 1, p. 43.)

49533. *FICUS ALBA* Reinw. Moraceæ.

(No. 960.) A shrub or small tree from the Malay Archipelago at altitudes under 4,000 feet. Its variously shaped leaves are 5 to 8 inches long, with whitish lower surfaces, and the axillary fruits are about half an inch in diameter. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 530.)

49527 to 49567—Continued.

49534. *FICUS* sp. Moraceæ.

(No. 962.)

49535. *FICUS* sp. Moraceæ.(No. 963.) "From Johore, Federated Malay States." (*Lyon.*)49536. *FICUS* sp. Moraceæ.

(No. 964.)

49537. *GARCINIA CORNEA* L. Clusiaceæ.

(No. 831.) A small erect tree, distributed throughout the Malay Archipelago. It has oblong or oblong-lanceolate leathery, shining leaves, 4 to 6 inches long, and roundish, bright-red fruits the size of a small orange. The seeds are inclosed in a white, juicy, very acid aril. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 260.)

For previous introduction, see S. P. I. No. 39549.

49538. *LAGERSTROEMIA SPECIOSA* (Muenchh.) Pers. Lythraceæ.(*L. flos-reginae* Retz.)

Crape myrtle.

(No. 711.) A tree 50 to 60 feet in height, with leaves 4 to 8 inches long and large panicles of flowers, which vary in color from rose to purple from morning to evening. This is the chief timber tree in Assam, eastern Bengal, and Chittagong, India, where it occurs along river banks and in swampy ground and is commonly cultivated as an avenue tree. It has been introduced into southern California. (Adapted from *Watt, Dictionary of the Commercial Products of India*, vol. 4, p. 701, and *Bailey, Standard Cyclopedia of Horticulture*, vol. 3, p. 1775.)

For previous introduction, see S. P. I. No. 45911.

49539. *LICUALA SPINOSA* Thunb. Phœnicaceæ.

Palm.

(No. 848.) A stout palm, 10 to 12 feet high, forming dense tufts, common on wet places throughout the Malay Peninsula. The trunk is about 3 inches thick, and the leaves are 6 or 7 feet long, with spiny petioles and round kidney-shaped blades about 4 feet in diameter. The spadix is longer than the leaves, and the spathes are green sprinkled with brownish scurf. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 322.)

49540. *LINOSPADIX PETRICKIANA* Hort. Phœnicaceæ.

Palm.

(No. 774.) A very elegant palm, native to New Guinea, of low, graceful, spreading habit. The long pinnate leaves have slender acuminate pinnæ. (Adapted from *Gardeners' Chronicle*, third series, vol. 24, p. 298.)

49541. *LIVISTONA* sp. Phœnicaceæ.

Palm.

(No. 815.) The palms of this genus are trees with terminal fan-shaped leaves, with branching flower spikes growing out from among the leaves. They are distributed throughout tropical Asia and Australia. (Adapted from *Lindley, Treasury of Botany*, vol. 2, p. 690.)

49542. *MAGNOLIA BLUMEI* Prantl. Magnoliaceæ.(*Manglietia glauca* Blume.)

(No. 695.) A tall glabrous tree with leathery oval or oblong leaves, 5 to 7 inches long, solitary terminal yellowish flowers an inch and a half in length, and ovoid fruits the size of a hen's egg. It is dis-

49527 to 49567—Continued.

tributed throughout Java. (Adapted from *King, Materials for a Flora of the Malayan Peninsula*, vol. 1, p. 14.)

49543. MORINDA BRACTEATA Roxb. Rubiaceæ.

(No. 760.) A medium-sized tree with a slender trunk, native to the eastern portions of the East Indian Archipelago. The most useful part of this tree is the root, which is a source of a red dye for linen and yarns, used by itself or with sapan wood (*Caesalpinia sapan*). The fruits are given to children as a vermifuge. (Adapted from *Heyne, Nuttige Planten van Nederlandschindië*, vol. 4, p. 207.)

49544. MYRICA JAVANICA Blume. Myricaceæ.

(No. 836.) An aromatic shrub, native to Java, with obovate leathery leaves and diœcious catkins. (Adapted from *Blume, Bijdragen Flora Nederlandsch Indië*, vol. 1, p. 517.)

49545. MYRISTICA INERS Blume. Myristicaceæ.

(No. 691.) A tree with slender dark-brown branchlets, oblong-lanceolate papery leaves up to 7 inches long, and large oblong fruits borne singly or in pairs, up to 3 inches long and half as thick. It is native to Java. (Adapted from *Journal and Proceedings, Asiatic Society of Bengal*, vol. 75, pt. 2, p. 230.)

49546. NAGEIA CUPRESSINA (R. Br.) F. Muell. Taxaceæ.

(*Podocarpus cupressina* R. Br.)

(Nos. 797 and 809.) A lofty evergreen tree, distributed throughout the Malay Archipelago. On the older branches the leaves are minute and lanceolate; on the younger branches the leaves are linear, distichous, and spreading. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 650.)

49547. NECTANDRA ANGUSTIFOLIA (Schrad.) Nees and Mart. Lauraceæ.

(No. 835.) A tree native to southern Brazil with narrowly lanceolate acuminate leaves and axillary panicles of flowers. The wood is used for interiors of houses and for cabinetwork. (Adapted from *Correa, Flora do Brazil*, p. 46, and *Linnaea*, vol. 8, p. 48.)

49548. ONCOSPERMA FILAMENTOSUM Blume. Phœnicaceæ. Palm
(*Areca tigillaria* Jack.)

(No. 726.) A very elegant palm with a trunk 30 to 40 feet high, distinctly annulate and armed, and with a thick graceful crown. The pinnate leaves are 10 to 12 feet long with pinnæ about a foot long. On the borders of paddy swamps in the Malay Peninsula this palm is quite common. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 464.)

For previous introduction, see S. P. I. No. 45962.

49549. ONCOSPERMA HORRIDUM (Griffith) Scheff. Phœnicaceæ. Palm.
(*Areca horrida* Griffith.)

(No. 707.) A stately palm, 30 to 40 feet tall, indigenous to the Straits Settlements. The trunk is annulate and much armed, and the pinnate dark-green leaves, which spread in every direction, are up to 16 feet in length and 5 feet in width. The axillary spadix has a stout yellow peduncle, and the round, purplish black fruits are the size of a musket ball. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 465.)

49527 to 49567—Continued.

49550. OREODOXA sp. Phœnicaceæ.

Palm.

(No. 771.) Some of the species of this genus are among the most graceful of palms, their slender ringed trunks becoming nearly a hundred feet in height and bearing large terminal pinnate leaves. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 321.*)

49551. OTOPHORA SPECTABILIS Blume. Sapindaceæ.

(No. 741.) A sapindaceous tree, native to Java, with alternate leaves composed of 7 to 15 pairs of narrowly oblong leaflets, terminal clusters of small flowers, and round berrylike fruits. (Adapted from *Koorders and Valetton, Boomsoorten op Java, Bijdrage No. 9, p. 171.*)

49552. PANDANUS AURANTIACUS Ridley. Pandanaceæ.

(No. 887.) A large branching shrub about 12 feet tall with stems 2 or 3 inches thick, found in swampy places near the sea in the Malay Peninsula. The very narrow leaves are 3 feet long and $1\frac{1}{2}$ inches wide, glaucous green and sharp pointed. The female inflorescence consists of a stout rachis a foot long and five globose orange heads. (Adapted from *Journal of the Royal Asiatic Society, Straits Branch, vol. 41, p. 49.*)

49553. PARANEPHELIUM MACROPHYLLUM King. Sapindaceæ.

(No. 841.) A tree 20 to 40 feet high, native to Perak, Java. The alternate, coriaceous pinnate leaves are 18 to 30 inches long, and the flowers are borne in erect axillary panicles. The surface of the globular woody fruits is covered with thick spines. (Adapted from *Journal of the Asiatic Society of Bengal, vol. 65, p. 450.*)

49554. PINANGA KUHLLI Blume. Phœnicaceæ.

Palm.

(No. 847.) A palm 16 to 25 feet high, native to the lower altitudes of western Java, with a ringed stem 2 inches in diameter. The leaves are terminal, with petioles 2 feet long and elliptical blades about 4 feet long. (Adapted from *Gardeners' Chronicle, 3d ser., vol. 31, p. 97.*)

49555. POLYALTHIA LATERIFLORA (Blume) Kurz. Annonaceæ.

(No. 806.) A tree 50 to 70 feet tall, found at low altitudes in Perak, Java. The leaves are leathery, oblong to elliptic-oblong, with shining upper surfaces and up to 15 inches in length, and the greenish yellow thickish flowers are borne in fascicles. (Adapted from *King, Materials for a Flora of the Malayan Peninsula, vol. 1, p. 307.*)

49556. POLYGONUM sp. Polygonaceæ.

(No. 697.)

49557. RANDIA DUMETORUM (Retz.) Lam. Rubiaceæ.

(No. 833.) A deciduous thorny shrub or small tree, found throughout India and distributed eastward to southern China. The bark and fruit are used medicinally, the former as an external remedy to relieve pains and the latter as an emetic, for which purpose it is considered very valuable. The fresh ripe fruit is also roasted and eaten by the natives in many parts of the country. The light-colored compact wood is used for agricultural implements. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 1, p. 389.*)

49558. RANDIA TOMENTOSA (Blume) Hook. f. Rubiaceæ.

(No. 957.) A large shrub with very stout branches and very stout horizontal spines 1 to 2 inches long. The obovate or roundish leathery leaves are about 2 inches in length, and the velvety flowers are usually

49527 to 49567—Continued.

solitary. This species is distributed from southern India eastward to Java. (Adapted from *Hooker, Flora of British India, vol. 3, p. 110.*)

49559. SABAL MAURITIAEFORMIS (Karst.) Griseb. and Wendl. *Phoenicaceæ.* **Palm.**

(No. 781.) A West Indian palm with a trunk 60 to 80 feet in height and over a foot in diameter and large roundish leaves multifid to the middle and up to 12 feet in diameter. The black fruits are about the size of peas. (Adapted from *Grisebach, Flora of the British West Indies, p. 514.*)

49560. SALACIA sp. *Hippocrateaceæ.*

(No. 945.) The species of this genus are smooth erect or trailing evergreen shrubs with opposite shining laurellike leaves and very small green or yellowish flowers. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1007.*)

49561. STADMANNIA FRASERI Linden. *Sapindaceæ.*

(No. 719.) The species of *Stadmannia* are trees with pinnate leaves having three to five pairs of elongated elliptical smooth leaflets and axillary panicles of small flowers. The wood is hard. (Adapted from *Engler and Prantl, Natürlichen Pflanzenfamilien, vol. 3, pt. 5, p. 334.*)

No published description of this species seems to be available in Washington.

49562. STYRAX sp. *Styracaceæ.*

(No. 808.) The members of this genus are trees or shrubs native to Asia and North America, with entire leaves and racemes of white flowers. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1109.*)

49563. TECTONA GRANDIS L. f. *Verbenaceæ.*

Teak.

(No. 832.) The common teak is a native of southern and central India. The young branches are quadrangular, the leaves are opposite and elliptical or egg shaped, and the white flowers are borne in terminal panicles. The wood is highly prized by shipbuilders because of its great strength and durability. (Adapted from *Lindley, Treasury of Botany, pt. 2, p. 1129.*)

For previous introduction, see S. P. I. No. 42374.

49564. TERMINALIA ARBOREA (Teysm.) Koord. and Val. *Combretaceæ.*

(No. 732.) A tree 30 meters high and 65 centimeters in diameter, distributed throughout Java at altitudes under 1,000 feet. The fruits are used only medicinally; a decoction is said to be a remedy for colic and other digestive disorders. (Adapted from *Heyne, Nuttige Planten Nederlandschindië, vol. 3, p. 355.*)

49565. TERMINALIA ARJUNA (Roxb.) Wight and Arn. *Combretaceæ.*

(No. 689.) *Arjan.* A very large tree with smooth green or whitish bark, found on river banks throughout central and southern India. The leaves are narrowly oblong, about 9 inches long, and the flowers, which appear in April and May, are borne in terminal panicles. This tree yields a transparent gum which is used as a drug in northern India; the bark is used for tanning, and the wood for carts and agricultural implements. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 6, pt. 4, p. 16,* and *Beddome, Flora Sylvatica of India, vol. 1, pl. 28.*)

For previous introduction, see S. P. I. No. 43668.

49527 to 49567—Continued.

49566. *VOACANGA GRANDIFOLIA* (Miquel) Rolfe. Apocynaceæ.
(*Pootia grandifolia* Miquel.)

(No. 744.) A shrub or small tree, native to Java, with opposite dark-green elliptic-oblong leaves up to a foot in length. The white flowers are borne in racemelike clusters. (Adapted from *Miquel, Flora van Nederlandsch Indië*, vol. 2, p. 417.)

49567. *CALAMUS* sp. Phœnicaceæ.

Rattan palm.

(No. 932.) There are several species of this genus whose stems are known under the names of rattan or canes. These have reedlike stems, rarely more than an inch or two in thickness, and pinnate leaves. The flowers are small, generally pink or greenish, and the fruits are covered with smooth, shining scales. (Adapted from *Lindley, Treasury of Botany*, vol. 1, p. 191.)

49568 to 49581.

From Paris, France. Seeds presented by Prof. E. Schribaux, directeur de la Station d'Essais de Semences. Received March 27, 1920. Quoted notes in italic by Professor Schribaux; other notes by C. W. Warburton.

49568. *AVENA STERILIS* L. Poaceæ.

Oats.

"*Avoine du Maroc*. A black oat with long medium-slender lemmas, weak to medium-strong awns, and numerous basal bristles. Probably a winter form and identical with the black kernels in S. P. I. No. 46565."

- 49569 and 49570. *AVENA SATIVA* L. Poaceæ.

Oats.

49569. "*Ligowo* × *Brie*. A segregating hybrid."

49570. "*Ligowo* × *Brie*. A segregating hybrid."

- 49571 to 49578. *TRITICUM AESTIVUM* L. Poaceæ.

Common wheat.

(*T. vulgare* Vill.)

49571. "*Blé de Bordeaux*."

49572. "*Blé de Gironde*."

49573. "*Bladette de Puylaurens*."

49574. "*Rieti* × *Japhet* (No. 30 ou A4)."

49575. "*Rouge de Alsace* × *Bordeaux* (B1)."

49576. "*Rouge de Alsace* × *Bordeaux* (B2)."

49577. "*Rouge de Alsace* × *Bordeaux* (B3)."

49578. "*Rouge de Alsace* × *Bordeaux* (B4)."

- 49579 and 49580. *TRITICUM DURUM* Desf. Poaceæ.

Durum wheat.

49579. "*Blé de Fanfaron*."

49580. "*Enano de Jaen*."

49581. *TRITICUM TURGIDUM* L. Poaceæ.

Poulard wheat.

"*Poulard de Australie*."

49582 to 49612.

From Kafue, Northern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 5, 1920. Quoted notes by Doctor Shantz.

49582. *ACACIA* sp. Mimosaceæ.

"(No. 346. December 7, 1919.) An acacia with very delicate papery pods; abundant along the upper Kafue River."

49582 to 49612—Continued.

49583. *ACACIA* sp. Mimosaceæ.

"(No. 349. December 7, 1919.) A large acacia with thick pods; probably the same as No. 276 [S. P. I. No. 49224]; is like *A. robusta*. One of the prominent, larger acacias of this region."

49584. *CUCURBITA MAXIMA* Duchesne. Cucurbitaceæ. **Pumpkin.**

"(No. 315. December 4, 1919.) A large pumpkin of the ordinary type."

49585. *CYMBOPOGON RUFUS* (Nees) Rendle. Poaceæ. **Grass.**

(*Andropogon rufus* Kunth.)

"(No. 356. December 7, 1919.) One of the coarser grasses. I question whether this is a good grass for grazing, but it might do for roughage or dry fodder."

49586 and 49587. *DIOSPYROS SENEGALENSIS* Perr. Diospyraceæ.

Inkulu.

49586. "(No. 296. Bolenga Camp on the Kafue River. November 26, 1919.) A small tree, 10 to 15 feet in height, which is more abundant here than any other type of fruit tree. The fruit, which is called *inkulu*, *inchänge*, or *chanja*, is much prized by the natives. It is somewhat smaller than No. 295 [S. P. I. No. 49466] but of equally good flavor; it has one to five seeds (usually three to four in each fruit), is yellow or slightly tan in color, and when not ripe is apparently full of tannin. When the natives wish to eat this or any other fruit they either chop down some of the larger limbs or the whole tree in order to secure the fruit with little or no exertion; they have no respect for trees or any natural growth."

49587. "(No. 297. Bolenga Camp on the Kafue River. November 25, 1919.) A superior tree of No. 296 [S. P. I. No. 49586]. This tree has somewhat longer fruits, which are sweeter and of much better flavor than those from the ordinary trees."

49588. *ERYTHRINA* sp. Fabaceæ.

"(No. 347. December 7, 1919.) A tree with thick pods which are constricted around each red bean. Used only as an ornament."

49589. *GARCINIA LIVINGSTONEI* T. Anders. Clusiaceæ.

"(No. 302. November 25, 1919.) More seeds of No. 263a [S. P. I. No. 49169] but collected at Kafue, where it is known as *munkononga* in the Chimyanja tongue."

49590. *GOSSYPIUM* sp. Malvaceæ.

"(No. 325. December 6, 1919.) A shrub 6 feet high which produces a large number of bolls that contain numerous seeds covered with very short brownish lint."

49591 and 49592. *LAGENARIA VULGARIS* Schrad. Cucurbitaceæ. **Gourd.**

49591. "(No. 316. December 4, 1919.) A small gourd used green as a vegetable; it is very good. All these fruits are stewed green as a vegetable in this country."

49592. "(No. 334. December 7, 1919.) A gourd used by the natives as soap; also said to be food for cattle and pigs; grows on a vine covering trees that are 20 to 30 feet high."

49582 to 49612—Continued.

49593. *LUFFA CYLINDRICA* (L.) Roemer. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

"(No. 303. November 25, 1919.) Seed of the luffa, which grows abundantly here. Same as No. 273a [S. P. I. No. 49163]."

49594. *MANIHOT GLAZIOVII* Muell. Arg. Euphorbiaceæ. Ceara rubber.

"(No. 351. December 7, 1919.) The Ceara rubber plant was introduced from South America, but is now one of the chief rubber plants of Africa. The trees seem to grow well and are about 15 feet high."

49595. *OCHNA POLYNEURA* Gilg. Ochnaceæ.

"(No. 326. December 7, 1919.) A small tree, 6 to 15 feet, which has unusually attractive light-green foliage and yellow flowers. The ochnas are among the most attractive trees of this section. For ornamentals they should be valuable wherever they can be grown. They withstand long droughts in this country, but their reaction to cold or frost will have to be determined experimentally."

A fruiting branch of this shrub is shown in Plate V.

49596. *OCHNA* sp. Ochnaceæ.

"(No. 327. December 7, 1919.) A low bush with red calyces, black carpels, and light glaucous leaves. A most attractive plant, 1 to 1½ feet high, forming a low clump, which when in fruit is a mass of red sepals set off by green and later black carpels. This is by far the most beautiful ochna I have seen, but it forms only a low bush, seldom 2 feet high. The shape is that of a low mound, about three or four times as wide as it is high. The edge is often silvery with the foliage, while the top is red and black from the sepals and carpels."

49597. *ODINA EDULIS* Sond. Anacardiaceæ.

"(No. 333. December 7, 1919.) A dark-purple grapelike fruit with a delicate skin, somewhat musty in flavor but pleasant after the first taste. It is eaten by the natives and is supposed to be a cure for 'black water fever.' The fruits are produced before the leaves, the latter appearing at about the time the fruits are ripe. The plant is acaulescent, or at least does not develop much above the surface of the soil and thus escapes the annual fires. It is abundant from Pretoria to Kafue."

49598. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

"(No. 343. December 7, 1919.) A plant quite abundant on the flats; said by the natives to be an oil plant."

49599. *STRYCHNOS* sp. Loganiaceæ.

"(No. 310. December 4, 1919.) The small-fruited sweet variety; it is relished by the natives. It is lemon-orange in color, has a thick stony rind, yellowish brown inside, and is rather juicy, with a tart but very agreeable flavor. It is unlike any fruit I have eaten, is much easier to eat than an orange and, I should say, as agreeable to the taste. In eating, the seeds are rejected, as are those of pomegranates. The fruits are borne in great abundance and apparently are possessed of excellent keeping qualities. I think this well worth trying out in cultivation."

For an illustration of fruits of this species, see Plate VI.

49600. *STRYCHNOS* sp. Loganiaceæ.

"(No. 311. December 4, 1919.) A large fruit, 3 to 5 inches across, very like No. 310 [S. P. I. No. 49599], but not of as good flavor according to the natives. I doubt whether there is much difference."

49582 to 49612—Continued.

49601. VIGNA sp. Fabaceæ.

"(No. 348. December 7, 1919.) This bean looks something like a cowpea, but is apparently a perennial: it was not seen in bloom. It grows 3 to 4 feet high and produces a good crop of beans. Those sent were the first ones to ripen."

49602 to 49604. XIMENIA AMERICANA L. Olacaceæ. False sandalwood.

49602. "(No. 301. November 25, 1919). A tree like No. 279 [S. P. I. No. 49250], but collected at Kafue."

49603. "(No. 304. December 4, 1919.) *Impinji*. Apparently the same as No. 301 [S. P. I. No. 49602] and No. 279 [S. P. I. No. 49250], but with slightly smaller fruits. These are fairly edible if skin and stone are both rejected. They look like *Prunus americana*, but are red in color and have a large stone with a 'paper' shell. The pounded seed is prized for its edible oil. Abundant in Nyasaland."

49604. "(No. 305. December 4, 1919.) Same as No. 301 [S. P. I. No. 49602]."

49605. ZEA MAYS L. Poaceæ.

Corn.

"(No. 306. December 4, 1919.) Corn, which is said to be small and early, now being planted by the natives on the south side of the Kafue River. The trees are burned down, or chopped and burned afterward, and corn is planted where the soil is richest and where there is least likelihood of trouble from weeds. Termite hills are usually favorite locations."

49606. (Undetermined.)

"(No. 294. Bolenga Camp on the Kafue River. November 25, 1919.) A small tree."

49607. (Undetermined.)

"(No. 298. Bolenga Camp on the Kafue River. November 25, 1919.) Called *m'tingele* by the Chimyanja. A small tree or shrub with a fruit that appears to be a small kumquat, but which is really fleshy outside. It is eaten by some of the natives. The fruit is very good, although the flesh is very thin."

49608. CANTHIUM LANCEOLATUM Hiern. Rubiaceæ.

Maululu.

"(No. 317. December 4, 1919.) Called *maululu* in Chimyanja, and 'plum' or 'fruit tree' by the whites. A small tree, 6 to 10 feet high, with a spreading top. The fruits are green, changing to light brown when ripe; they are somewhat spicy and sweetish and very pleasant after the first taste; each fruit has one or possibly two seeds, from 1 to 1½ inches long. This is regarded by the whites as their best fruit. Green fruits collected one day ripen rapidly and are often good to eat the following day."

Plate VII shows the fruits and Plate VIII the habit of growth of this tree.

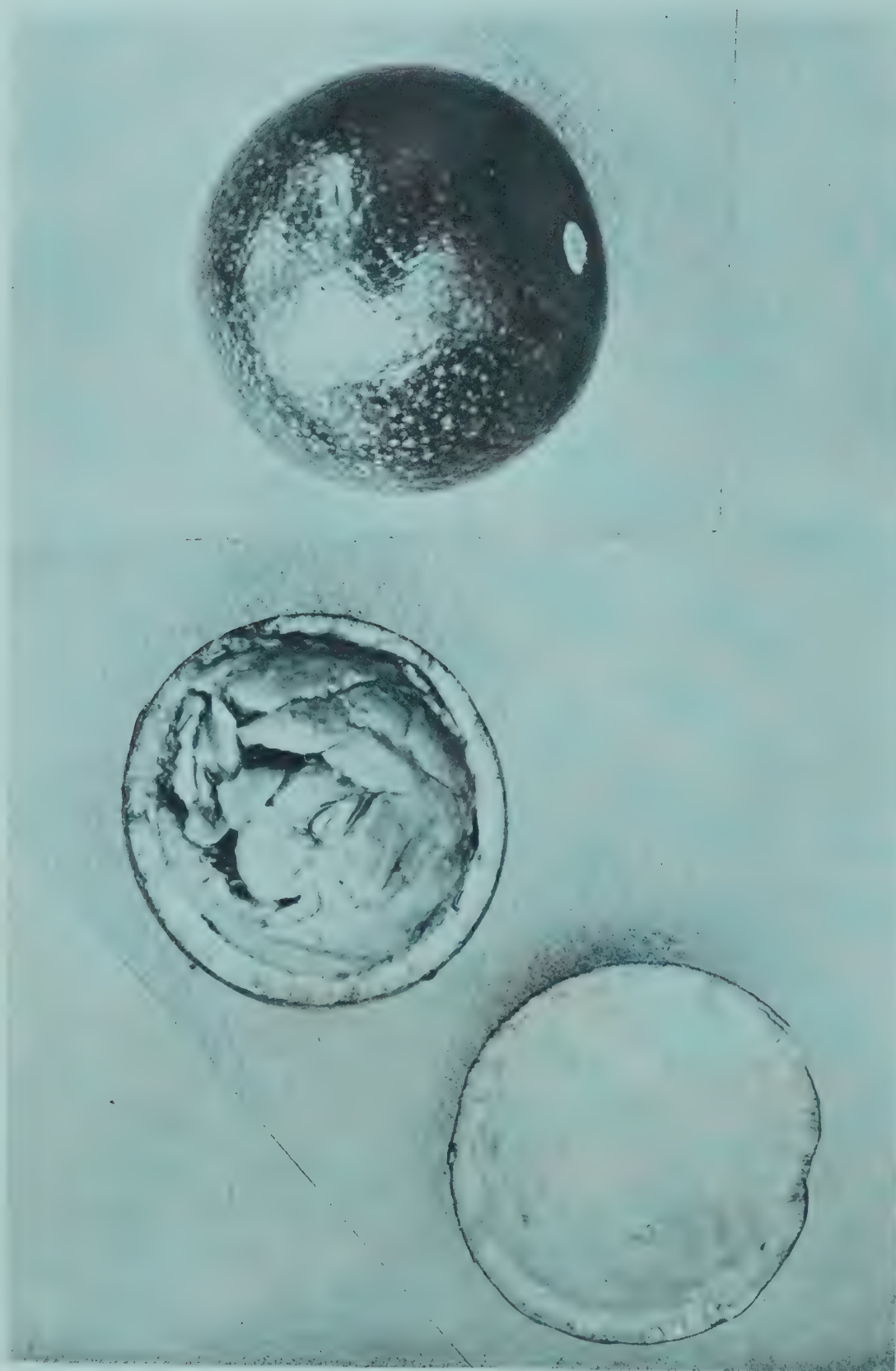
49609. (Undetermined.)

"(No. 319. Kafue. December 4, 1919.) *M'pila* (Chinja). A fruit about 2 inches through, which has a hard rind, green with a purple flush on one side; it is filled with seeds, which are surrounded with more or less fibrous pulp; the juice is milky. In flavor it is almost exactly like *Tamarindus*. It is used to make a very pleasant drink."



A DROUGHT-RESISTANT ORNAMENTAL FROM NORTHERN RHODESIA. (OCHNA POLYNEURA GILG., S. P. I. No. 49595.)

One of the most attractive of the native ornamentals, this species of Ochna is particularly beautiful both in flower and fruit. The shrub or small tree, 6 to 15 feet, in height, is quite as striking when the light-green foliage is contrasted with its black and yellow fruits as when the leaves form a neutral background for the masses of yellow flowers. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36824FS.)



A NEW RELATIVE OF THE KAFIR ORANGE. (STRYCHNOS SP., S. P. I. No. 49599.)

"This small-fruited species has a deep-yellow fruit, with sweet juicy flesh, slightly acid, but of very pleasing flavor. It is much easier to eat than an orange and fully as agreeable to my taste. The fruits are borne in great abundance and are apparently possessed of excellent keeping qualities." (Shantz.) The true Kafir orange is growing and fruiting in Florida. (Photographed, slightly reduced, by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36832FS.)



FRUITS OF THE MAULULU FROM THE ZAMBEZI BASIN. (*CANTHIUM LANCIFLORUM* HIERN, S. P. I. No. 49608.)

Regarded by the white people of the Zambezi River region as their best fruit, these "plums," as they are often called, merit wide trial. The sweet spicy flavor is very pleasant, and to those who have feasted on them the taste appeals as does that of few other fruits. (Photographed, slightly reduced, by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 3, 1919; P36826 FS.)



A FRUITING TREE OF THE MAULULU. (*CANTHIUM LANCEFLORUM* HIERN, S. P. I. No. 49608.)

These trees are always small, usually not more than 6 to 10 feet tall, and their delicious fruits are borne profusely. The fruits are green, changing to a light brown when ripe, and are about the size of a large plum. When picked green they ripen rapidly and are often good to eat on the first or second day after being gathered. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, December 2, 1919; P36818FS.)

49582 to 49612—Continued.

49610. THUNBERGIA sp. Acanthaceæ.

"(No. 341. Kafue. December 7, 1919.) An attractive plant with a trumpet-shaped flower. This would make a fine garden flower."

49611. TROCHOMERIA GARCINI (L.) Benth. and Hook. Cucurbitaceæ.
(*Zehneria garcini* Sond.)

"(No. 350. Kafue. December 7, 1919.)"

An annual vine, native to Africa and India, with cordate, palmately 5-lobed leaves and small greenish flowers followed by 2-seeded fruits the size of a cherry. (Adapted from *Harvey, Flora Capensis*, vol. 2, p. 487.)

49612. PRINTZIA sp. Asteraceæ.

"(No. 355. Kafue. December 7, 1919.) A low perennial resembling *Centaurea*. May be valuable as a border plant."

49613 to 49661.

From Darjiling, Bengal, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received March 12, 1920.

49613. AIRA sp. Poaceæ.

Grass.

Received as *Deyeuxia filiformis*; identified at the Grass Herbarium.

49614. ALANGIUM ALPINUM (C. B. Clarke) Smith and Cave. Cornaceæ.

A deciduous tree, approaching 39 feet in height, with ascending branches and coriaceous leaves, glabrous above and pilose veined beneath. The lax, axillary, 3-flowered inflorescences with almost glabrous stamens are followed by black fruits, which are at first elongate turbinate, afterwards compressed ellipsoid. Native to the eastern Himalayas at altitudes of 5,000 to 9,000 feet. (Adapted from *Records of the Botanical Survey of India*, vol. 6, p. 96.)

49615. ANEMONE VITIFOLIA Buch.-Ham. Ranunculaceæ.

One of the commonest and most ornamental plants in Nepal, where it grows in all the forests of the great valley and the surrounding mountains, delighting in the most shady, retired, and moist situations in the vicinity of rills and torrents. It is also found in Kumaon and in Gossam Than in the Himalayas. The erect, nearly simple stem, clothed with oppressed hairs, is 1½ to 3 feet high. The cordate radical leaves are long stalked, lobed, and coarsely serrated, much veined and somewhat wrinkled, glabrous above, downy and paler beneath. The involucre consists of two leaves like the radical leaves but smaller in size, inclosing two smaller leaves, from within which arise the three or four peduncles each bearing a single showy flower, drooping in the bud, afterwards erect. The white sepals are obovate and concave. (Adapted from *Curtis's Botanical Magazine*, pl. 3376.)

For previous introduction, see S. P. I. No. 47639.

49616. BERBERIS ANGULOSA Wall. Berberidaceæ.

Barberry.

A rare ornamental shrub, 4 feet high and upwards, growing at elevations of 11,000 to 13,000 feet in Nepal, Kumaon, and Sikkim. In autumn it forms a striking object from the rich golden yellow and red coloring of the foliage. The fruit is edible, being less acid than that of the common

49613 to 49661—Continued.

species of Europe and Asia. The erect, puberulent branches are stout, angled, and grooved, with slender, three to five branched spines. The deciduous fascicled leaves, 1 to 1½ inches long are oblanceolate, entire or with a few spinous teeth on the thickened margin, thinly coriaceous, opaque above, shining beneath. The pale golden yellow flowers are pendent on solitary or fascicled peduncles. The scarlet, globosely obovoid berry is nearly an inch long. (Adapted from *Curtis's Botanical Magazine*, pl. 7071.)

For previous introduction, see S. P. I. No. 40143.

49617. *BERBERIS CONCINNA* Hook. f. Berberidaceæ.

Barberry.

A very beautiful and distinct species allied to *Berberis sibirica*, but readily distinguished by the long tripartite spines, slender pedicels, and glaucous leaves. The plant, native to the Sikkim Himalayas at elevations of 12,000 to 13,000 feet, forms a small low bush, 1 to 3 feet high, with spreading, almost prostrate branches thickly covered with small deep-green leaves, polished above, snowy white and glaucous below; these colors, together with the large scarlet berries and red branchlets give the shrub a singularly pretty appearance when in fruit. (Adapted from *Curtis's Botanical Magazine*, pl. 4744.)

For previous introduction, see S. P. I. No. 40145.

49618. *BERBERIS HOOKERI* Lem. Berberidaceæ.

Barberry.

(*B. wallichiana* Hook., not DC.)

An upright-growing ornamental shrub, from 6 to 10 feet high, from near the summit of Mount Shecpur, Nepal. The long branches bear slender, rigid, deeply tripartite spines nearly an inch long. The beautiful spreading fascicled leaves resemble those of Christmas holly. From the center of these fascicles spring the drooping flower clusters. The outer 3 of the 9 to 12 spreading concave yellow sepals are tinged with red. The bright but rather pale yellow petals are concave and smaller than the sepals. (Adapted from *Curtis's Botanical Magazine*, pl. 4656.)

For previous introduction, see S. P. I. No. 44381.

49619. *BERBERIS UMBELLATA* Wall. Berberidaceæ.

Barberry.

A hardy subevergreen ornamental shrub, about 3 feet high, with umbellike racemes of yellow flowers produced abundantly in June. It is readily increased either by seeds or by layering. It is easily known by its narrow, spineless leaves, slightly glaucous beneath when fresh, and becoming more so when dry. Native to the Himalayas. (Adapted from *Edwards's Botanical Register*, vol. 30, pl. 44.)

For previous introduction, see S. P. I. No. 33023.

49620. *BETULA UTILIS* D. Don. Betulaceæ.

Birch.

(*B. bhojpattra* Wall.)

A moderate-sized deciduous tree, native to the temperate Himalayas from Kashmir to Sikkim and Bhutan, 40 to 60 feet high, or a shrub at high altitudes. The smooth, shining, reddish white or white bark peels off in broad horizontal rolls. In these layers the lenticels appear as pink patches. The wood is white with a pinkish tinge, tough, even grained, and moderately hard. A decoction of the bark is used as a wash for poisoned wounds. (Adapted from *Kirtikar, Indian Medicinal Plants*, vol. 2, p. 1213.)

For previous introduction, see S. P. I. No. 47647.

49613 to 49661—Continued.

49621. *BROMUS* sp. Poaceæ.

Grass.

Received as *Avena aspera*; identified at the Grass Herbarium.49622. *CALAMAGROSTIS* sp. Poaceæ.

Grass.

Received as *Deyeuxia seratescens*; sample identified at the Grass Herbarium.49623. *CASSIOPE FASTIGIATA* (Wall.) D. Don. Ericaceæ.

A beautiful free-flowering alpine shrub, about 9 inches high, one of the choicest from the northwestern Himalayas. These shrubs are fairly abundant at elevations of 12,000 to 13,000 feet in shady situations and in moist, peaty, well-drained soil. The solitary white bell-shaped flowers have the corolla segments recurved, showing the pink center and the curious awned stamens, like those of the arbutus. The tiny leaves, imbricated in four rows which give the stem a four-sided appearance, have white, membranous, ciliated margins. (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 47, p. 379.)

49624. *CATHCARTIA VILLOSA* Hook. f. Papaveraceæ.

A hardy annual or biennial found in the Sikkim Himalayas. The abundance of long, shaggy, fulvous hairs and the bright-yellow glabrous flowers give it a handsome appearance. The cordate radical leaves are long petioled and palmately five lobed; the stem leaves are sessile, and the uppermost are pinnatifid. The large nodding flowers have golden anthers and a green fleshy stigma. (Adapted from *Curtis's Botanical Magazine*, pl. 4596.)

49625. *CAUTLEYA LUTEA* Royle. Zinziberaceæ.(*Roscoea elatior* Smith.)

A plant common in the eastern Himalayas at altitudes of 5,000 to 8,000 feet, where it develops erect tufted stems, 8 to 10 inches long, with pale or reddish brown lower surfaces. The golden yellow flowers are borne in spikes 4 to 8 inches high. (Adapted from *Curtis's Botanical Magazine*, pl. 6991.)

For previous introduction, see S. P. I. No. 47656.

49626. *CORYLUS FEROX* Wall. Betulaceæ.

Hazel.

A Chinese tree 20 feet in height, with light, compact, pale wood. The nuts are small and precisely like the common hazelnut in taste. The tawny yellow shell is exceedingly hard and thick. The involucre is made up of beautiful greenish gray lacinate bracts. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 1, p. 77.)

49627. *COTONEASTER ACUMINATA* Lindl. Malaceæ.

An ornamental shrub native to the Himalayas, with erect branches, ovate-lanceolate leaves $1\frac{1}{2}$ inches long, and white or pinkish flowers, followed by orange-red globose obovoid fruits. (Adapted from *Revue Horticole*, vol. 61, p. 348.)

For previous introduction, see S. P. I. No. 47663.

49628. *CYPERUS* sp. Cyperaceæ.

Sedge.

Received as *Stipa orthoraphium*; identified at the Grass Herbarium.

49613 to 49661—Continued.

49629. *DANTHONIA CACHEMYRIANA* Jaub. and Spach. Poaceæ. Grass.

A perennial grass, with stems 1 to 2 feet high, ascending from a stout woody stock, densely tufted or creeping below and clothed with shining sheaths. The long narrow convolute leaves are erect, wiry, and glabrous; the lower sheaths rarely tomentose. The spikelets are erect, pale, and rather shining. Native to the temperate and alpine Himalayas and western Tibet at elevations of 10,000 to 14,000 feet. (Adapted from *Hooker, Flora of British India, vol. 7, p. 281.*)

49630. *DICENTRA SCANDENS* (D. Don) Walp. Papaveraceæ.

An herbaceous perennial, native to the temperate Himalayas from Nepal to Garwhal at elevations of 5,000 to 6,000 feet. The angled stem is slender and graceful, and each raceme bears 8 to 12 yellow or purple flowers nearly an inch long, followed by membranous lanceolate capsules. (Adapted from *Hooker, Flora of British India, vol. 1, p. 121.*)

49631. *DICENTRA THALICTRIFOLIA* (Wall.) Hook. f. and Thoms. Papaveraceæ.

A slender climbing plant with a perennial root, native to the temperate regions of the Himalayas from Nepal to Bhutan and in the Khasi Hills at altitudes of 4,000 to 8,000 feet. Very similar to *Dicentra scandens* except for the thick fleshy ovate-cordate capsule. (Adapted from *Hooker, Flora of British India, vol. 1, p. 121.*)

For previous introduction, see S. P. I. No. 47674.

49632. *DOBINEA VULGARIS* Buch.-Ham. Anacardiaceæ.

A branching shrub from Nepal, with opposite elliptic, acutely serrate leaves, 4 to 6 inches long. The minute flowers are in lax panicles; the staminate are campanulate and the pistillate apetalous. The narrow capsule has winged margins. (Adapted from *Don, Prodrromus Florae Nepalensis, p. 249.*)

49633. *ELAEOCARPUS PRUNIFOLIUS* Wall. Elæocarpaceæ.

A tree native to Sylhet and the Khasi Hills at altitudes of 1,000 to 3,000 feet. The glabrous lanceolate leaves, 3 to 5 inches long and often recurved, are on 2-inch petioles. The loose racemes of silky flowers, nearly as long as the leaves, are followed by ovoid drupes nearly an inch long. (Adapted from *Hooker, Flora of British India, vol. 1, p. 407.*)

49634. *ENKIANTHUS DEFLEXUS* (Griffith) C. Schneid. Ericaceæ.
(*E. himalaicus* Hook. f. and Thoms.)

A large ornamental shrub or small tree, 20 feet in height, native to Bhutan and Sikkim at elevations of 8,000 to 10,000 feet, with deciduous leaves crowded toward the ends of the branches and whorls of drooping flowers. The stiff slender branches have red-brown bark, the young ones being bright red, as are also the petioles, midribs, and margins of the leaves. The lanceolate serrulate leaves are 2 to 3 inches long, pubescent beneath when young. The broadly campanulate flowers, half an inch long, with dull yellowish red petals streaked and tipped with brighter red are borne on pendulous hairy pedicels, 1½ inches long. (Adapted from *Curtis's Botanical Magazine, pl. 6460.*)

For previous introduction, see S. P. I. No. 33772.

49613 to 49661—Continued.

49635. *FICUS HOOKERI* Miquel. Moraceæ.

An entirely glabrous tree, with thinly coriaceous oval leaves up to 11 inches in length and axillary, depressed, obovate fruits growing in pairs, up to an inch in diameter when ripe. This fig is not common; it ascends to 6,000 feet in the Sikkim Himalayas and Khasi Hills, India. (Adapted from *King, Annals of the Royal Botanic Garden, Calcutta, vol. 1, p. 36.*)

For previous introduction, see S. P. I. No. 47685.

49636. *GYNOCARDIA ODORATA* R. Br. Flacourtiaceæ.

A moderate-sized evergreen tree, with hard round fruits which grow on the stem and main branches, found from Sikkim and the Khasi Hills eastward to Chittagong, Rangoon, and Tenasserim. The fruits are used for fish poison. The seeds were long supposed to be the source of chaulmoogra oil; the true source was discovered in 1899 to be *Hydnocarpus kurzii*. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 4, p. 192*, and *Watt, Commercial Products of India, pp. 546, 1067.*)

49637. *IMPERATA CYLINDRICA* (L.) Beauv. Poaceæ.

Blady grass.

(*I. arundinacea* Cyrilli.)

A well-known agricultural and technical chemist in Queensland has conducted very successful experiments in manufacturing paper pulp out of *lalang grass*, or, as it is more commonly known, *blady grass*, on account of its great blades, which are 4 or 5 feet long. It resembles very closely the esparto of Spain and North Africa, and when dried before making it into pulp yields as high as 60 per cent of first-class paper-making pulp.

This expert states that esparto is the best pulp known and the blady-grass product is within 10 per cent of the same value. There are millions of tons of this grass growing in Queensland. Three crops a year can be cut from it. (Adapted from *Indian Trade Journal, vol. 44, p. 252.*)

For previous introduction, see S. P. I. No. 47700.

49638. *IRIS CLARKEI* Baker. Iridaceæ.

Iris.

A handsome iris with a very stout creeping rootstock, a tall stout stem, and linear leaves reaching 2 feet in length. The perianth is bright lilac blotched with violet, with a yellow throat. The bright-violet styles are an inch long with square crests. (Adapted from *Hooker, Flora of British India, vol. 6, p. 275.*)

For previous introduction, see S. P. I. No. 39019.

49639. *JASMINUM HUMILE* L. Oleaceæ.

Jasmine.

A profuse-flowered Chinese plant with drooping, somewhat angular branches and pinnate entire leaves, paler beneath. The terminal-panicked yellow flowers are very sweet scented. The tube of the corolla is shorter than the 5 or 6 cleft limb, which is rolled back. The large tongue-shaped anthers lie in the throat of the corolla tube. One plant, only a foot in height, bore 12 panicles. (Adapted from *Curtis's Botanical Magazine, pl. 1731.*)

For previous introduction, see S. P. I. No. 39120.

49613 to 49661—Continued.

49640. *LIGUSTRUM CONFUSUM* Decaisne. Oleaceæ.

A small tree, sometimes attaining a height of 40 feet in Sikkim, India, where it is native. The leathery leaves are up to 3½ inches long, and the white flowers appear in panicles from 1 to 5 inches in length. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 616.)

For previous introduction, see S. P. I. No. 47706.

49641. *LILIUM GIGANTEUM* Wall. Liliaceæ.

Lily.

This majestic lily is common in the damp thick forests of the Himalayas, the Provinces of Kumaon, Gurhwal, and Busehur. The bulb grows close to the surface in rich black mold at altitudes of 7,500 to 9,100 feet, where it is covered with snow November to April. The smooth hollow stems are commonly from 6 to 9 feet high and are used for musical pipes. The handsome cordate leaves, shining dark green above, paler below, are 10 to 12 inches long on petioles of equal length; both become smaller near the apex. In the large, fragrant white flowers, 12 to a raceme, the perianth tube is slightly greenish, and the inner surfaces of the segments are tinged with deep purple. (Adapted from *Curtis's Botanical Magazine*, pl. 4673.)

49642. *MICHELIA EXCELSA* Blume. Magnoliaceæ.

A lofty deciduous tree found in the temperate Himalayas from Nepal to Bhutan, at altitudes of 5,000 to 8,000 feet, and on the Khasi Hills. The tree is known as the white magnolia; the sapwood is small and white and the heartwood olive brown and glossy. The wood is soft but very durable and is used for planking, for door and window frames, and for furniture. It is the principal wood employed for these purposes in the Darjiling Hills. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 243.)

For previous introduction, see S. P. I. No. 47731.

49643. *MICHELIA LANUGINOSA* Wall. Magnoliaceæ.

A Himalayan tree of variable height, with leaves white and fuzzy beneath and white flowers 3 to 4 inches in diameter. In Sikkim it forms a large bush, flowering in autumn. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 43.)

For previous introduction, see S. P. I. No. 47732.

49644. *PANAX PSEUDOGINSENG* Wall. Araliaceæ.

(*Aralia pseudoginseng* Benth.)

An herbaceous perennial from Nepal, with 3 to 5 fascicled tubers, which are mucilaginous and slightly aromatic. The purplish stem is erect and simple, and the three or four radical leaves, 2 to 6 inches long, are palmate. The upper leaves are somewhat rough with copious gray, bristly hairs. The leaflets are lanceolate and deeply serrate. The small white flowers are in three umbels, followed by globose scarlet berries. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 2, p. 30.)

For previous introduction, see S. P. I. No. 42622.

49645. *PIPTANTHUS NEPALENSIS* (Hook.) Sweet. Fabaceæ.

A fairly hardy evergreen climber with beautiful foliage and flowers, which are attractive throughout the summer. It thrives in poor soils if the situation be warm, sunny, and sheltered. In common with most leguminous plants *Piptanthus* makes simple vertical roots 3 feet in

49613 to 49661—Continued.

length; it then develops stems 3 feet long the first season and reaches a height of 10 feet in the third year. It speedily covers the wall space allotted to it. In the first spring it will make lateral growths, each terminated by a raceme of yellow flowers that in shape closely resembles a bunch of grapes; the individual flowers bear a close resemblance to those of the English gorse (*Ulex europaeus*). The deep green, glabrous, trifoliate leaves are large and of similar shape to those of well-grown broad beans (*Vicia faba*). (Adapted from *Gardeners' Chronicle*, 3d ser., vol. 43, p. 178.)

49646. *POLYGALA ARILLATA* Buch.-Ham. Polygalaceæ.

A large shrub from the mountains of Nepal, with dark-green leaves 5 to 7 inches long and nodding yellow-flowered racemes equaling the leaves in length. The large 3-petaled flowers are irregular; two petals are spreading, and the center one is 3-lobed with the innermost lobe keel shaped. The purple coriaceous capsule is kidney shaped, and the solitary globose seeds are suspended from the center of the capsule in large fleshy, golden yellow arils. (Adapted from Wallich, *Plantae Asiaticae Rariores*, vol. 1, p. 84.)

49647. *PRUNUS CERASOIDES* D. Don. Amygdalaceæ. Himalayan cherry.
(*P. puddum* Roxb.)

A large tree of brilliant appearance when in flower, from altitudes of 3,000 to 8,000 feet in the temperate Himalayas. The cymes of rose-red or white flowers are followed by oblong drupes with acid yellowish red flesh. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 314.)

For previous introduction, see S. P. I. No. 48276.

49648. *RHODODENDRON ANTHOPOGON* Don. Ericaceæ. *Rhododendron*.

A small shrub, 1 foot high, with rough, densely scaly branches and leaves which are 1½ inches long, cinnamon brown beneath and, as it were, tomentose from the layer of glands. The yellow flowers are in numerous short terminal fascicles. (Adapted from Hooker, *Flora of British India*, vol. 3, p. 472.)

For previous introduction, see S. P. I. No. 39051.

49649. *RHODODENDRON LEPIDOTUM* Wall. Ericaceæ. *Rhododendron*.

"This is a very distinct evergreen from the Himalayas and western China. It grows about 1½ feet high, forming compact bushes which bear curious flat purple or reddish blossoms freely during May." (*Gardening Illustrated*, vol. 40, p. 303.)

For previous introduction, see S. P. I. No. 39066.

49650. *RHODODENDRON SETOSUM* Don. Ericaceæ. *Rhododendron*.

A neat little shrublet about a foot in height, native of the moorland and rocky slopes of the loftier passes leading across the eastern Himalayas into Tibet, reaching its uppermost limit within a few miles of the summit. Here the brilliant red-purple flowers render this species a charming object, and after hot sunshine the air is filled with a heavy aroma due to a copious resinous secretion which testifies to the comparatively dry climate it enjoys. It is a typical high alpine species with its late flowering and early fruiting, its dwarf habit, and slow growth. The twigs are beset with deciduous spreading hairs. The tiny coriaceous

49613 to 49661—Continued.

ous leaves are sparingly scaly on both surfaces. (Adapted from *Curtis's Botanical Magazine*, pl. 8523.)

For previous introduction, see S. P. I. No. 39067.

49651. *RIBES GRIFFITHII* Hook. f. and Thoms. Grossulariaceæ.

A glabrous plant from the temperate and subalpine east Himalayas, in Bhutan and Sikkim at 10,000 to 13,000 feet. The broad cordate leaves, 3 to 7 lobed, are very smooth and pointed. The lax pendent racemes, 9 inches long, bear large flowers, followed by very beautiful red berries, which are extremely sour. (Adapted from the *Journal of the Linnean Society*, vol. 1, p. 88.)

For previous introduction, see S. P. I. No. 44904.

49652. *RUBIA CORDIFOLIA* L. Rubiaceæ.

Madder.

An herbaceous creeper with rough or hispid leaves, five to a whorl, common throughout the hilly districts of India from the northwest Himalayas eastward and southward to Ceylon. The manjit root obtained from this plant was formerly much employed by the natives of India in dyeing coarse cotton cloth various shades of scarlet, coffee-brown, or mauve. It has been largely displaced by the tar dyes, but is still employed for special purposes or in remote localities. The method of dyeing practiced is much the same all over India, the color being produced by steeping the fabric in an infusion of the stem or root chips, subsequent to being mordanted with a solution of alum. (Adapted from *Watt, Commercial Products of India*, p. 927.)

For previous introduction, see S. P. I. No. 48277.

49653. *RUBUS MOLUCCANUS* L. Rosaceæ.

A robust prickly plant from elevations of 3,000 to 7,000 feet in the central and eastern Himalayas. The inflorescences and wide-spreading branches are densely clothed with white, gray, or fulvous tomentum, and the leaves, 2 to 10 inches across, are tomentose beneath. The white flowers are followed by globose juicy fruits of many small scarlet drupes. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 330.)

For previous introduction, see S. P. I. No. 47782.

49654. *RUBUS* sp. Rosaceæ.

Received as *Rubus niveus*. The seeds do not agree with our samples of *R. niveus* Thunb. nor with *R. niveus* Wall.=*R. pedunculatus* Don.

49655. *SLOANEA DASYCARPA* (Benth.) Hemsl. Elæocarpaceæ.

A Chinese tree about 15 feet high, with rigidly erect flowering branches. The lanceolate leaves are coriaceous, the nodding flowers are axillary or in terminal corymbs; the sepals are broad, and the cup-shaped corolla is toothed and scarcely longer than the very numerous stamens. The prickly capsule dehisces into five valves, each valve bearing a fleshy, golden aril containing four or five seeds. (Adapted from *Hooker, Icones Plantarum*, pl. 2628.)

49656. *SOLANUM MACRODON* Wall. Solanaceæ.

An erect, shrubby plant, clothed with minute, glistening, jointed hairs, growing at altitudes of 3,000 to 8,000 feet in the temperate Himalayas from Nepal to Bhutan and in the Khasi Hills. The lanceolate leaves,

49613 to 49661—Continued.

2 to 6 inches long, are setulose above. The purple-rose or nearly white flowers are followed by small globose berries. (Adapted from *Hooker, Flora of British India, vol. 4, p. 232.*)

For previous introduction, see S. P. I. No. 47799.

49657. *SORBUS MICROPHYLLA* Wenzig. Malaceæ.
(*Pyrus microphylla* Wall.)

An ornamental shrub native to the Himalayas, with erect, spreading branches and gray-black bark. The compound unequally pinnate leaves are green above, paler below. The small flowers are in corymbs and are followed by small ruby-colored pomes. (Adapted from *Garcke, Linnaea, vol. 38, p. 76.*)

For previous introduction, see S. P. I. No. 39135.

49658. *SPIRAEA BELLA* Sims. Rosaceæ. Spirea.

A beautiful hardy shrub, native to Nepal, continuing in flower from May until the end of the summer. It may be increased by layers or seeds and flourishes in fresh loamy soil. The lanceolate blue-green leaves are alternate and the full terminal clusters of rose-colored flowers make this a striking ornamental. (Adapted from *Loddiges, Botanical Cabinet, vol. 13, pl. 1268.*)

For previous introduction, see S. P. I. No. 47801.

49659. *SPIRAEA MICRANTHA* Hook. f. Rosaceæ. Spirea.

A shrub, native to Sikkim, India, and Bhutan, at altitudes of 5,800 to 10,000 feet. The membranous or coriaceous ovate-lanceolate leaves, 7 inches long, are glaucous hairy beneath. The very broad open cymes have small pale-colored flowers with spreading hairs. (Adapted from *Hooker, Flora of British India, vol. 2, p. 325.*)

For previous introduction, see S. P. I. No. 47802.

49660. *STYRAX HOOKERI* C. B. Clarke. Styracaceæ. Styrax.

A tree, often 40 feet high, from altitudes of 6,000 to 7,000 feet in Sikkim and Bhutan. The inch-long flowers are tomentose outside, and the young branches are stellately pubescent. The wood is white, close grained, and moderately hard. (Adapted from *Hooker, Flora of British India, vol. 6, pt. 8, p. 385.*)

49661. *SWERTIA HOOKERI* C. B. Clarke. Gentianaceæ.

A perennial herb with tufted, long-petioled, elliptic, radical leaves, 4 inches long, and smaller sessile stem leaves. The nodding purplish blue-veined flowers with oblong blue anthers are in axillary cymes. The annual flowering stems, 1½ to 4 feet high, are erect, thick, and hollow. (Adapted from *Hooker, Flora of British India, vol. 4, p. 127.*)

For previous introduction, see S. P. I. No. 41591.

49662 to 49686.

From Paris, France. Presented by Vilmorin-Andrieux & Co. Received March 16, 1920.

49662. *BERBERIS BRACHYPODA* Maxim. Berberidaceæ. Barberry.

(Seeds of Wilson No. 4416.) A bushy barberry 4 to 7 feet in height, found at altitudes of 5,200 to 11,700 feet in western China. It has 3-parted spines, oval serrate leaves, long slender panicles of yellow flowers, and

49662 to 49686—Continued.

scarlet fruits up to half an inch in diameter. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 375, and *Schneider, Illustriertes Handbuch der Laubholzkunde*, vol. 2, p. 922.)

For previous introduction, see S. P. I. No. 43818.

49663. BUDDLEIA DAVIDII Franch. Loganiaceæ.

(*B. variabilis* Hemsl.)

(Seeds.) A tall shrub, native to the mountainous portions of northern China, with opposite dark-green leaves from 4 inches to a foot in length, oblong or narrowly lanceolate, and either coarsely serrate or entire. The clear lilac flowers are crowded in dense heads 4 to 6 inches long. (Adapted from *Curtis's Botanical Magazine*, pl. 7609.)

For previous introduction, see S. P. I. No. 44531.

49664. CHAENOMELES LAGENARIA WILSONII Rehd. Malaceæ.

(Seeds of Wilson No. 4120.) A bush 4 to 6 meters tall, found at an altitude of 1,800 meters in western Szechwan. The flowers vary in color from white to red, and the fruits are golden and red. This variety differs from the typical form in the dense yellowish wool which covers the lower surfaces of the leaves. (Adapted from *Sargent, Plantae Wilsonianae* vol. 2, p. 298.)

For previous introduction, see S. P. I. No. 34589.

49665. CORNUS PAUCINERVIS Hance. Cornaceæ.

(Seeds of Wilson No. 136.) A low, spreading shrub, native to eastern Szechwan, China, where it frequents river banks and similar situations. The deep-green lanceolate leaves are nearly 2 inches long, and the white, showy flower clusters are produced abundantly in July from the ends of the branches and branchlets. About the 1st of October appear the jet-black fruits, which are quite showy. (Adapted from the *Gardening Magazine*, vol. 24, p. 200.)

49666. COTONEASTER SALICIFOLIA FLOCCOSA Rehd. and Wils. Malaceæ.

(Plants of Wilson No. 1133a.) A graceful shrub 2 to 4 meters high, native to western Szechwan, China, at altitudes of 2,300 to 3,000 meters. The coriaceous, usually oblong-lanceolate light-green leaves are up to 2 inches in length; the white flowers are borne in dense corymbs, and the roundish fruits are light red. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 173.)

For previous introduction, see S. P. I. No. 44422.

49667. CRATAEGUS CULLASAGENSIS Ashe. Malaceæ.

(Cuttings.) A small tree up to 25 feet in height, native to Macon County, N. C., where it frequents dry woods and slopes. It has rough dark bark, dropping branches, obovate or elliptic serrate leaves, and roundish fruits about half an inch long, which become orange-red at maturity. (Adapted from *Small, Flora of the Southeastern United States*, p. 555.)

49668. DAVIDIA INVOLUCRATA Baill. Cornaceæ.

(Plants.) A shrub or low tree, indigenous to western China, with alternate, oval, acuminate leaves and terminal flower heads. Each flower head is preceded by two large creamy white bracts of unequal size, the larger reaching a length of about 7 inches. (Adapted from *Gardeners' Chronicle*, 3d. ser., vol. 33, p. 786.)

49662 to 49686—Continued.

49669. *DAVIDIA INVOLUCRATA VILMORINIANA* (Dode) Hemsl. Cornaceæ.

(Seeds.) A tree 40 to 50 feet tall, native to western China, with alternate, ovate, coarsely serrate, bright-green leaves 2 to 4 inches long, inconspicuous flowers in terminal globular heads, and greenish yellow fruits with brown dots, nearly 2 inches long. The bracts are like those in the typical form. (Adapted from *Curtis's Botanical Magazine*, pl. 8432.)

For previous introduction, see S. P. I. No. 44127.

49670. *DEUTZIA VILMORINAE* Lemoine and Bois. Hydrangeaceæ.

(Plants of M. Vilmorin No. 1547.) A vigorous erect shrub, native to China, suggesting in general appearance some of the smaller kinds of *Philadelphus*. Late in the spring it bears clusters of pure-white flowers with yellow anthers. Because of its late flowering it usually escapes the injurious effects of late frosts. (Adapted from *Gardening Illustrated*, July 7, 1917.)

For previous introduction, see S. P. I. No. 35184.

49671. *DEUTZIA* sp. Hydrangeaceæ.

(Plants of M. Vilmorin No. 4277.)

49672. *HEMIPTELEA DAVIDII* (Hance) Planch. Ulmaceæ.
(*Zelkova davidii* Hemsl.)

(Cuttings.) A stout-branched shrub, native to Mongolia, with smooth brown bark and long stout spines on the smaller branches. The caducous leaves are small, oval, and deeply dentate, and the very inconspicuous flowers appear in April. (Adapted from *Revue Horticole*, vol. 85, p. 30.)

49673. *HYPERICUM PATULUM HENRYI* Veitch. Hypericaceæ.

(Plants of Wilson No. 1355.) This variety of *Hypericum patulum*, first discovered by Dr. A. Henry in Yunnan, China, is hardier than the typical form and sturdier in habit. The ovate dark-green leaves are 2 to 3 inches long, and the flowers are of a rich glowing yellow and about 2 inches wide. (Adapted from *Gardeners' Chronicle*, third series, vol. 38, p. 179.)

For previous introduction, see S. P. I. No. 43849.

49674. *JASMINUM NUDIFLORUM* Lindl. Oleaceæ. Jasmine.

"A yellow-flowered jasmine, growing on dry banks, ravines, etc., in Shansi, China, where it flowers before the leaves come out, sometimes even in midwinter. The plants are of spreading habit, with very long, slender, green branches which root wherever they touch moist ground, making them very desirable for covering old walls, banks, etc." (*Frank N. Meyer*.)

For previous introduction, see S. P. I. No. 38248.

49675 to 49677. *LIGUSTRUM DELAVAYANUM* Hariot. Oleaceæ. Privet.

This hardy shrub was first discovered by Abbé Delavay in the mountains of Yunnan, China, where it became 2 to 4 meters high. In habit it is prostrate-spreading except for a few perfectly upright branches which rise from the center of the shrub. The shining dark-green foliage, which is remarkably persistent, reminds one of a myrtle and with the white flowers and blue-black fruits makes this plant a very attractive ornamental. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 601, and *Revue Horticole*, vol. 73, p. 495.)

49662 to 49686—Continued.

49675. (Seeds of Wilson No. 1075.)

49676. (Seeds of Wilson No. 1076a.)

49677. (Seeds of Wilson No. 1290.)

49678. *POPULUS YUNNANENSIS* Dode. Salicaceæ.

Poplar.

(Cuttings.) A poplar from the Province of Yunnan, China, with oval or narrowly oval, lightly dentate acuminate leaves with whitish lower surfaces. (Adapted from Dode, *Extraits d'Une Monographie Inédite du Genre Populus*, p. 63.)

49679. *PYRACANTHA CRENULATA* (Don) Roemer. Malaceæ.(*Crataegus crenulata* Roxb.)

(Plants.) "A rather small hawthorn, closely allied to *Crataegus pyracantha*, with small glistening green foliage and bearing a multitude of bright-red berries, found in stony places in Kansu, China, at altitudes of 3,000 to 5,000 feet. It would be very attractive as an ornamental rockery shrub." (*Frank N. Meyer.*)

For previous introduction, see S. P. I. No. 40737.

49680. × *RHODODENDRON SMITHII* Sweet. Ericaceæ.

Rhododendron.

(Plants.) "A hybrid of *Rhododendron arboreum* and *R. ponticum* with rose-purple flowers." (*Rehder.*)

49681. *RHODODENDRON* sp. Ericaceæ.

Rhododendron.

(Plants of M. Vilmorin No. 5303.)

49682. *RIBES DIACANTHA* Pall. Grossulariaceæ.

Currant.

(Plants.) A deciduous shrub, 4 to 6 feet high, native to Siberia and northern China. The obovate or rounded leaves are coarsely toothed and often 3-lobed and are up to 2 inches in width. The male flowers are yellow and are borne in erect racemes, and the smooth scarlet fruits are about the size of a red currant. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 401.)

For previous introduction, see S. P. I. No. 40431.

49683. *ROSA LONGICUSPIS* Bertol. Rosaceæ.

Rose.

(*R. sinowilsoni* Hemsl.)

(Plants of Wilson No. 1334.) A rambling bush about 20 feet high, native to western China, with sparse short prickles, large dark-green leaves, and very large lax corymbs of white flowers, the latter up to 2 inches in width. (Adapted from *Kew, Bulletin of Miscellaneous Information*, 1906, p. 158.)

49684. *ROSA SOULIEANA* Crép. Rosaceæ.

Rose.

(Seeds.) A large straggling bushy rose, native to Szechwan, China, with short, very sharp prickles and pale-green leaves 2 to 3 inches long. The creamy white flowers are about 2 inches wide and are borne singly at the ends of the branches or in cymose clusters. The small globular fruits are orange. (Adapted from *Willmott, The Genus Rosa*, pt. 4, pl. 18.)

For previous introduction see S. P. I. No. 38159.

49685. *SPIRAEA JAPONICA ACUMINATA* Franch. Rosaceæ.

Spirea.

(Plants of Wilson No. 579.) A handsome, hardy, deciduous shrub, 3 to 6 feet in height, native to western Szechwan and Hupeh, China, at altitudes of 1,000 to 1,700 meters. In July and August appear the

49662 to 49686—Continued.

brilliant rose-colored or red flowers which make a very fine contrast with the dark-green foliage. (Adapted from *Paxton, The Flower Garden*, vol. 11, p. 113, and *Sargent, Plantae Wilsonianae*, vol. 1, p. 452.)

49686. *STYRAX JAPONICUM* Sieb. and Zucc. *Styracaceæ*.

(*S. serrulatum* Hook. f., not Roxb.)

(Plants.) A bush or small tree, common in southern Japan, where it is much cultivated on account of its ornamental appearance. The leaves, very variable in size and form, are usually elliptic or narrower, and the white flowers, borne in drooping cymes, are about three-fourths of an inch in diameter. (Adapted from *Curtis's Botanical Magazine*, pl. 5950.)

49687 to 49708.

From Belgian Kongo. Seeds and bulbs collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 22, 1920. Quoted notes by Doctor Shantz.

49687. *BRACHIARIA BRIZANTHA* (Hochst.) Stapf. *Poaceæ*.

Grass.

(*Panicum brizanthum* Hochst.)

"(No. 424. Bukama. January 15, 1920.) A tall grass, especially in the higher land. Very abundant on the uplands, forming a large part of the great grass cover of this grassland country, with scattered trees and bushes."

49688. *CAESALPINIA PULCHERRIMA* (L.) Swartz. *Cæsalpiniaceæ*.

"(No. 437. Bukama. January 16, 1920.) One of the most ornamental shrubs of this section. The flowers are red with 10 long stamens. It is extensively planted on the streets of Kongola."

For previous introduction, see S. P. I. No. 7266.

49689. *CHLORIS PARAGUAIENSIS* Steud. *Poaceæ*.

Grass.

"(No. 422. Bukama. January 15, 1920.) A semiruderal which with *Dactyloctenium aegyptium* constitutes the chief weed cover at Bukama. It is very prolific and ripens its seeds early. It occurs even in the native sod."

For previous introduction, see S. P. I. No. 45208.

49690. *DACTYLOCTENIUM AEGYPTIUM* (L.) Richter. *Poaceæ*.

Grass.

(*Eleusine aegyptiaca* Desf.)

"(No. 423. Bukama. January 15, 1920.) A ruderal varying greatly in size; it forms a dense early growth following rains. It often looks like *Buchloë* when reduced to one spikelet by overcrowding."

For previous introduction, see S. P. I. No. 38017.

49691. *DALECHAMPIA* sp. *Euphorbiaceæ*.

"(No. 417. Bukama. January 16, 1920.) A very attractive slender vine with white bracts below the flowers. It looks somewhat like a *Euphorbia*."

49692. *DIGITARIA UNIGLUMIS* (A. Rich.) Stapf. *Poaceæ*.

Grass.

"(No. 438. Bukama. January 15, 1920.) An important river-bottom grass with slender branched panicles."

49687 to 49708—Continued.

49693. *ECHINOCHLOA PYRAMIDALIS* (Lam.) Hitchc. and Chase. Poaceæ. Grass.
(*Panicum pyramidale* Lam.)

"(No. 425. Bukama. January 15, 1920.) A tall grass of the lower lands."

49694. *ERAGROSTIS CILIANENSIS* (All.) Link. Poaceæ. Grass.

"(No. 426. Bukama. January 15, 1920. Herb. No. 469.) A low grass; it may be the same as that collected at Elizabethville."

49695. *GLADIOLUS PSITTACINUS* Hook. Iridaceæ. Gladiolus.

"(No. 418. Bukama. January 16, 1920. Herb. No. 560.) A beautiful pure-yellow gladiolus which grows in very wet soil, but also occurs on the upland. An important introduction, probably the same as No. 432, which is a fine large pure-yellow flower, as fine as our cultivated types. Very pure, but ranging to almost mottled with reddish spots in some individuals. The flower has unusually good form."

For previous introduction, see S. P. I. No. 14003.

49696. *HIBISCUS* sp. Malvaceæ.

"(No. 416. Bukama. January 16, 1920. Herb. No. 576.) A low plant, about a foot high, with pretty pink flowers."

49697. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ.

"(No. 420. Bukama. January 15, 1920.) A grass, apparently wild, all about Bukama; it grows either singly or in clumps from 5 to 12 feet high. When in flower the panicle is yellowish or with a reddish tinge, but dark or almost black when ripe. The leaves of the nearly ripe plant are red spotted. It is apparently regarded only as a weed here, but it is a very abundant grass along the river bottom. For the most part the plants are 7 to 12 feet high with very long heads. All down the Lualaba River to Kindu it is quite abundant, often growing almost as a swamp plant, but usually along the sides of paths or roads as a semiruderal. No use is made of it by the natives, and I have not seen it grazed."

49698. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.

"(No. 421. Bukama. January 15, 1920.) A mixed lot of seed from many plants of the above [S. P. I. No. 49697]."

For previous introduction, see S. P. I. No. 45209.

49699. *INDIGOFERA* sp. Fabaceæ.

"(No. 434. Bukama. January 16, 1920. Herb. No. 572.) A plant resembling *Astragalus*, but with leaves like a rose."

49700. *MELOTHRIA* sp. Cucurbitaceæ.

"(No. 436. Bukama. January 16, 1920.) A very small fruited cucurbit; fruit one-fourth of an inch in diameter."

49701. *OXALIS* sp. Oxalidaceæ.

"(No. 433. Bukama. January 16, 1920. Herb. No. 553.) Bulbs of a very odd oxalis collected between Kalule Sud and Bukama. It is attractive chiefly on account of the leaf, which is cut back at the apex to form two lobes very much like leaflets. It has a storage root below the bulb as large in diameter as the bulb itself."

49687 to 49708—Continued.

49702. *Pennisetum glaucum* (L.) R. Br. Poaceæ. Pearl millet.
(*P. typhoideum* Rich.)

"(No. 427. Bukama. January 15, 1920.) This plant, apparently a ruderal, grows almost everywhere and in almost the same locations as corn. Seed is exported at times to Rhodesia."

For previous introduction, see S. P. I. No. 48095.

49703. *Ricinus communis* L. Euphorbiaceæ. Castor-bean.

"(No. 419. Bukama. January 16, 1920.) Castor-oil bean."

For previous introduction, see S. P. I. No. 47913.

49704. *Vigna* sp. Fabaceæ.

"(No. 429. Bukama. January 16, 1920. Herb. No. 578.) A large vine very abundant here, with some variation in leaf. The following numbers may not be distinct, but have been kept separate and are each from the type shown in herbarium specimens."

49705. *Vigna* sp. Fabaceæ.

"(Nos. 430 and 431. Bukama. January 16, 1920. Herb. No. 581.) Similar to the foregoing [S. P. I. No. 49704]."

49706. *Vigna* sp. Fabaceæ.

"(No. 428. Bukama. January 16, 1920. Herb. No. 578.) Similar to the foregoing [S. P. I. Nos. 49704 and 49705]."

49707. *Zea mays* L. Poaceæ. Corn.

"(No. 415. Kalule Sud. January 10, 1920.) Corn grown by the natives at this place; apparently the small variety seen growing in the small fields here. Corn is now growing in the fields here, nearly ripe and in all stages to that just emerging from the soil. That is always true of native culture whenever moisture conditions are such as to permit it."

49708. (Undetermined.)

"(No. 435. Bukama. January 16, 1920.) A small legume, about a foot high, with opposite long-lanceolate leaves and two beans in a pod."

49709 and 49710.

From Para, Brazil. Seeds presented by Paul Le Cointe, Goeldi Museum. Received March 31, 1920.

49709. *Mimusops huberi* Ducke. Sapotaceæ.

"*Massaranduba* with large yellow fruits; from the vicinity of Para." (Le Cointe.)

A large tree found in the primeval forests of Para, Brazil; it has very thick, rough bark and obovate leaves about 6 inches long. The 1 or 2 seeded roundish fruits are pale yellow with occasional reddish violet markings. They are edible and are sold in the markets of Para. The timber is used for general construction work and for railroad ties. (Adapted from *Archivos do Jardim Botânico do Rio de Janeiro*, vol. 2, p. 14.)

49710. *Theobroma grandiflora* (Willd.) Schum. Sterculiaceæ.

"*Cupú-assú* from the vicinity of Para." (Le Cointe.)

The cupú-assú is one of the most important fruit trees of the State of Para, where it commonly grows in slightly shaded places in the lower Amazon basin. The elliptical fruits, which are borne on the trunk and

49709 and 49710—Continued.

branches like the cacao, are the largest of the genus, being as large as coconuts, and the hard shell incloses a fibrous acid pulp from which a delightful drink is prepared. (Adapted from *Kew, Bulletin of Miscellaneous Information*, 1910, No. 5, p. 164.)

For previous introduction, see S. P. I. No. 33260.

49711 to 49713.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received March 9, 1920.

49711. BOTOR TETRAGONOLOBA (L.) Kuntze. Fabaceæ. Goa bean.
(*Psophocarpus tetragonolobus* DC.)

A tropical or subtropical blue-flowered herbaceous perennial which forms a dense cover and holds its leaves all summer. Underground tubers are formed, which are eaten raw or cooked; the young pods make a delicious vegetable when cooked as green beans are cooked; the shelled seeds are eaten even after the pods become too tough for food; and the young inflorescences are often used for salads. An analysis of the dried tubers showed the following percentages of constituents: Water, 9.05; fat, 0.98; protein, 24.62; carbohydrates, 56.07; cellulose, 5.38; ash, 3.90. (Adapted from *Bornay, Les Plantes Tropicales de la Famille des Légumineuses*, p. 183.)

For previous introduction, see S. P. I. No. 47510.

49712. CITRUS WEBBERII Wester. Rutaceæ.

"*Mangapug*. I commend these seeds from Cotabato to your special attention as one of our best native citrus fruits and difficult to obtain." (Wester.)

For previous introduction, see S. P. I. No. 47919.

49713. DILLENIA INDICA L. Dilleniaceæ.

"*Hondapara*. A fruit tree introduced from India. This tree should prove successful in Porto Rico and possibly in southern Florida." (Wester.)

A handsome medium-sized tree with a round compact crown; the dark-green leaves, 30 to 43 centimeters long and 9 centimeters in width, are coarsely serrate, with prominent veins. The large white flowers are fragrant and attractive; the smooth, greenish, heart-shaped fruits, 80 millimeters long by 95 millimeters across, are produced in great profusion, maturing in September and October. The edible part consists of the large fleshy sepals which inclose the carpels and are pleasantly acid, suggesting the flavor of an unripe apple. In India the sepals are used in making jelly and cooling drinks and also as a vegetable in curries. (Adapted from the *Philippine Agricultural Review*, vol. 10 p. 16.)

For previous introduction, see S. P. I. No. 6887.

49714 to 49716.

From Kalule Sud, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 12, 1920. Quoted notes by Doctor Shantz.

49714 to 49716—Continued.**49714.** *ANANAS SATIVUS* Schult. f. Bromeliaceæ.**Pineapple.**

"(No. 414. Kalule Sud. January 10, 1920.) Slips of a pineapple from the side of the track. May be from Natal; may be grown in the Kongo."

49715. *GLADIOLUS* sp. Iridaceæ.

"(No. 411. Kalule Sud. January 10, 1920.) Bulbs of a tall yellowish gladiolus with small red spots, abundant especially along the track. Compares favorably with the cultivated forms in size."

49716. (Undetermined.) Orchidaceæ.

"(No. 412. Kalule Sud. January 10, 1920.) A plant of a small orchid common on the trees about here. Not in flower at this time."

49717 to 49719.

From Grinnell, Iowa. Seed presented by Henry A. Conard, Grinnell College. Received March 19, 1920. Quoted notes by Mr. Conard.

49717. *CAPSICUM ANNUUM* L. Solanaceæ.**Red pepper.**

"Seeds from three plants raised in Grinnell, Iowa, in 1919, from seed sent from Changsha, Hunan, China, to Ko-Nien Yang, a young Chinese student in the botany department. The fruits are 5 to 6 inches long, about 1 inch through at the stem end, tapering to a point; deep red, thin fleshed, and very pungent in flavor; very prolific. Subject to a fungous disease causing concentric circles of black pustules."

49718 and 49719. *CUCURBITA PEPO* L. Cucurbitaceæ.**Pumpkin.**

49718. "Seed from a large pumpkin grown in the botanical garden of Grinnell College, Grinnell, Iowa, in 1919, from seed sent from Changsha, Hunan, China, to Ko-Nien Yang. The fruits, cut in December, reached 18 inches across and 12 inches high; they are shallowly furrowed and of a dull-orange color with many green spots; the flesh is deep orange, 2 to 3 inches thick, soft and easily cooked, and of mild flavor. The skin is thin and soft but immune to rots, the fruits keeping perfectly into March."

49719. "From medium-sized fruit, picked before full maturity, cut in March."

49720. *CASUARINA CUNNINGHAMIANA* Miquel. Casuarinaceæ.

From San Gabriel, Calif. Seed presented by William Hertrich, San Marino Ranch. Received March 20, 1920.

A tree, 60 to 70 feet high, native to New South Wales and Queensland, with hard, close-grained, prettily marked timber, which is used for shingles and staves. The wood burns well and the ashes retain heat for a long time. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 397.)

49721 and 49722.

From Scheemda, Netherlands. Seed presented by N. V. Homo Ten Have, seedsman. Received March 20, 1920.

49721. *BRASSICA ALBA* (L.) Boiss. Brassicaceæ.**White mustard.**

An annual white mustard from eastern Europe, northern Africa, and northern and middle Asia. The seeds are less pungent than those of the black mustard (*Brassica nigra*) but are used in a similar manner. The young leaves of both are useful as a potherb and also as a salad. The cold-pressed oil of mustard seed serves for table use.

49721 and 49722—Continued.

From 15 to 20 pounds of seed of the white mustard are required to sow an acre, which in the climate of California yields in a few months a harvest of 1,400 pounds of seed. The plant matures its seeds well, even in the desert tracts of central Australia. It can be grown in shallow soil, even on land recently reclaimed from swamps, but it prefers clayey ground. The stalks and foliage after the seed harvest serve as sheep fodder. The plant can be employed with great advantage as green manure. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 82.)

For previous introduction, see S. P. I. No. 45000.

49722. BRASSICA JUNCEA (L.) Cass. Brassicaceæ. Mustard.

A mustard native from middle Africa to China. It is cultivated all over India for Sarepta mustard seed; also extensively raised in China as a pickle. It is a good salad plant. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 82.)

For previous introduction, see S. P. I. No. 32416.

49723 to 49729. CITRUS spp. Rutaceæ.

From Seharunpur, United Provinces, India. Budwood presented by A. C. Hartless, superintendent, Government Botanic Gardens. Received March 22, 1920. Quoted notes by Mr. Hartless.

49723 and 49724. CITRUS GRANDIS (L.) Osbeck. Pummelo.

49723. "Red pomelo."

49724. "Large white-fleshed pomelo."

49725. CITRUS sp.

"Nagpur orange."

49726. CITRUS sp.

"Round seedless lemon."

49727. CITRUS sp.

"Kaghzi lime."

49728. CITRUS sp.

"At Auni Kala lime."

49729. CITRUS sp.

"Sylhet or Rangpur lime."

49730. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From the city of Guatemala. Budwood collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 22, 1920.

"Budwood of various ages from avocado No. 41, Finca El Pintado."
(*Popenoe.*)

49731. LILIUM NEPALENSE D. Don. Liliaceæ. Lily.

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received March 24, 1920.

A showy lily, native to the central Himalayas, with a slender erect stem, 2 to 3 feet long, leafy to the inflorescence. The glossy bright-green leaves, 4 to 6 inches in length, are oblong-lanceolate and 5 ribbed. The flowers, 4 to 5 inches long, are greenish yellow outside and yellow within and flushed except in the

upper third with purplish black; the oblanceolate segments are reflexed only in the upper half. The purplish black filaments bear yellow anthers nearly an inch long. The plant was first discovered in the high mountains of Nepal. (Adapted from *Curtis's Botanical Magazine*, pl. 7043.)

For previous introduction, see S. P. I. No. 46086.

49732. GLADIOLUS sp. Iridaceæ.

From Kabalo, Belgian Kongo. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer for the Bureau of Plant Industry. Received March 26, 1920.

49733 to 49736.

From Foochow, Fukien, China. Seeds collected by J. B. Norton, Agricultural Explorer for the Bureau of Plant Industry. Received March 29, 1920. Quoted notes by Mr. Norton.

49733. MELOTHRIA HETEROPHYLLA (Lour.) Cogn. Cucurbitaceæ.

"(Herb. No. 1551. Kuliang Hills, near Foochow. July, 1919.) A wild vine with beautiful red fruits about the size of plums. This should be valuable as a cover for trellises."

49734. RUBUS PAYKOUANGENSIS Lev. Rosaceæ.

Raspberry.

"(Herb. No. 1264. Kuliang Hills, near Foochow. July, 1919.) A low simple-leaved raspberry common in deep ravines. The fruit is edible but not plentiful."

49735. RUBUS SWINHON Hance. Rosaceæ.

Raspberry.

"(Herb. No. 1262. Kuliang Hills, near Foochow. July 3, 1919.) A black-purple raspberry, rather dry and bitter, but a very vigorous type. Suitable for crossing with those lacking in flavor."

49736. STYRAX SERRULATUM Roxb. Styracaceæ.

Styrax.

"(Herb. No. 1560. Kuliang Hills, near Foochow. July, 1919.) A small shrub bearing an abundance of fruit."

49737 to 49742.

From Antigua, Guatemala. Cuttings collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 17, 1920. Quoted notes by Mr. Popenoe.

49737. BEGONIA sp. Begoniaceæ.

Begonia.

"(No. 290. February 16, 1920.) A species which is found in moist places on the upper slopes of the Volcan de Agua at altitudes of approximately 7,000 to 9,000 feet. It often reaches 6 feet in height, and its flesh-pink flowers are of large size."

49738. CRATAEGUS STIPULOSA (H. B. K.) Steud. Malaceæ. Manzanilla.

"(No. 289. February 16, 1920. Herb. No. 949.) *Manzanilla*. A wild tree growing on the Volcan de Agua at about 8,000 feet altitude. See S. P. I. No. 45575 for description."

49739 and 49740. PERSEA AMERICANA Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

49739. "(No. 291. February 16, 1920.) Avocado No. 38 from the Finca La Chacara in Guatemala. Guatemalan race. The parent tree is about 35 feet high, of erect habit, branched 12 feet from the ground, with an oval open crown. The bearing habits of the tree

49737 to 49742—Continued.

appear to be good; the crop this season is about 400 fruits, well distributed through the crown. The fruits are borne singly, never in clusters.

"The fruits on the parent tree are variable in size. The largest weigh about 24 ounces, the smallest not over 8 ounces. The shape is fairly uniform. The relative size of the seed varies somewhat as is usual in avocado varieties. The major-domo of the finca recommends this as a very good fruit. Technically it may be described as follows:

"From broadly ovoid to nearly oval, sometimes tending to become broadly pyriform; weight 20 ounces, more or less; length $4\frac{1}{2}$ inches; greatest breadth 4 inches; base rounded, the stem inserted almost squarely; apex flattened or slightly depressed; surface smooth, dull green with numerous greenish yellow and russet dots; skin about one-twentieth of an inch thick, woody and brittle in texture, readily separating from the flesh; flesh cream yellow, pale green close to the skin, with slight fiber markings, smooth in texture and of rich nutty flavor; quality very good; seeds oblate, weighing about 2 ounces; tight in the cavity with both seed coats adhering closely. Ripening season probably midseason to late, March to June at Antigua."

49740. "(No. 293. February 16, 1920.) Avocado No. 40 from the Finca La Chacara in Antigua. Guatemalan race. The parent tree is about 25 feet high, spreading in habit, with a dense crown (most of the foliage is on the outside). The crop this year is not heavy, but the bearing habits of the tree are said to be good. The major-domo recommends this as the finest avocado in the finca, and to me it looks unusually promising because of the large size of the fruit coupled with the small size of the seed and the excellent quality of the flesh.

"Following is a description of the fruit: Form oval to elliptic, sometimes oblique; weight 16 to 24 ounces; length $4\frac{1}{2}$ to $5\frac{1}{2}$ inches; greatest breadth $3\frac{1}{4}$ to 4 inches; base broadly pointed, the stem inserted slightly to one side; apex broadly pointed, somewhat flattened on the ventral side; surface undulating to faintly pebbled, moss green with numerous yellowish green dots; skin $1\frac{1}{2}$ to 2 millimeters thick (about one-fifteenth of an inch), woody, brittle; flesh cream yellow, pale green close to the skin, free from all fiber discoloration, and of rich, pleasant flavor; quality excellent; seed relatively very small, tight in the cavity, with both seed coats adhering closely to the cotyledons. Season apparently rather late."

49741. RUBUS sp. Rosaceæ.

Raspberry.

"(No. 287. February 16, 1920.) A wild raspberry from the upper slopes of the Volcan de Agua (collected at about 9,000 feet), near Antigua. The plants, which are found in grassy places on rich volcanic loam, send up stems 4 to 6 feet long, which often bend over and root at the tips. The flowers are white, and the fruits, which I have seen only in an immature state, are produced in abundance. Evidently they are as large as the raspberries of the north, and the Indians say they are of good quality."

49737 to 49742—Continued.

49742. *SALVIA LINDENII* Benth. Menthaceæ.

Sage.

"(No. 288. February 16, 1920.) A red-flowered shrub which grows abundantly on the upper slopes (at altitudes of 8,000 to 9,000 feet) of the Volcan de Agua, near Antigua. It is erect, slender, and 8 to 10 feet in height. The flowers are double the size of those of *Salvia splendens* and of a rich rose-crimson. The species, which is evidently a perennial, should be hardy enough to stand the winters of California and Florida."

49743. *TRIGONELLA FOENUM-GRÆCUM* L. Fabaceæ. Fenugreek.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received March 9, 1920.

"This plant yields an important condiment, and its root system is so well provided with tubercles that it is worthy of serious attention as a green-manure crop. The seeds are also of value for feeding purposes, and a large quantity of fodder is produced, which, if cut before the seeds ripen, is of excellent quality. The condition powders and condiment foods which are sold in England extensively and fed to ailing horses and cattle are mixtures of fenugreek with other meals or grains. Fenugreek is sometimes planted with berseem." (David Fairchild.)

49744. *THEOBROMA CACAO* L. Sterculiaceæ.

Cacao.

From Coban, Guatemala. Seeds presented by Dr. Oscar Majus. Received March 23, 1920.

A wide-branching evergreen tree, native to Central America and South America. The brown or purple beanlike seeds furnish the chocolate and cocoa of commerce. Apparently there are numerous distinct varieties, but little has been done thus far in the selection of the best types for commercial plantings.

49745 to 49796.

From the city of Guatemala, Guatemala. Collected by Wilson Popenoe, Agricultural Explorer for the Bureau of Plant Industry. Received March 23, 1920. Quoted notes by Mr. Popenoe.

49745. *ACACIA FARNESIANA* (L.) Willd. Mimosaceæ.

Cassie.

"(No. 327a. El Barranquillo. February 26, 1920.) *Subin*. Seeds of a tree about 20 feet high, which in Guatemala produces an abundance of small yellow flowers in January."

For previous introduction, see S. P. I. No. 45012.

49746. *PITHECOLOBIUM TORTUM* Mart. Mimosaceæ.

"(No. 322a. El Barranquillo. February 26, 1920. Herb. No. 953.) *Aripin*. Seeds of the medium-sized tree which produces an abundance of small yellow flowers in February."

49747 and 49748. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

49747. "(No. 318. Guatemala. February 26, 1920.) Plants of *Piña de Palín*, from San Lorenzo del Cubo, about 5,300 feet altitude. This pineapple is not of excellent quality, but, like *Red Spanish*, which it resembles in other respects as well, it is a good shipper.

"The plant is distinguished by its broad, coarsely serrate leaves. The fruit is oblong to oval-oblong, commonly about 6 inches long, with a large crown and broad recurving leaves. The surface is

49745 to 49796—Continued.

deep brownish yellow, and the carpels are marked by deeply incised lines. The eyes stand out prominently, making the surface of the fruit decidedly rough. The flesh is crisp, deep yellow, with plenty of acid and aroma, and enough sugar so that it can be eaten, when fully ripe, without additional sweetening. The juice is very abundant. This variety seems to do better than others at high altitudes, i. e., in a cool climate."

49748. "(No. 319. Guatemala. February 26, 1920.) Plants of *Piña de azucar*, from San Lorenzo del Cubo, about 5,300 feet altitude. This variety, which is usually seen only on the coast or at altitudes of 3,000 feet and lower, strongly resembles *Smooth Cayenne*, and is probably a Guatemalan form of the latter."

49749. *ARGEMONE MEXICANA* L. Papaveraceæ.

"(No. 325a. El Barranquillo. February 26, 1920.) *Carlos Santo*. Seeds of an herbaceous plant about 4 feet high, which produces in March bright-yellow poppylike flowers about 2 inches broad."

49750. *BIXA ORELLANA* L. Bixaceæ.

Annato tree.

"(No. 329a. El Barranquillo. February 26, 1920. Herb. No. 967.) *Achiotillo*. Seeds of a large shrub or small tree which produces rather large white flowers in January."

For previous introduction, see S. P. I. No. 44954.

49751. *BRACHYPODIUM MEXICANUM* (Roem. and Schult.) Link. Poaceæ.
Grass.

"(No. 297a. Antigua. February 17, 1920.) Seeds of a common grass from the upper slopes of the Volcan de Agua at altitudes of 7,000 to 8,000 feet. Its ultimate height is about 3 feet, and its leaves are rather succulent and narrow."

49752. *CASSIA* sp. Cæsalpiniaceæ.

"(No. 343a. El Barranquillo. February 26, 1920.) *Verbenilla*. Seeds of a tree 20 feet high, which produces yellow flowers in December."

49753. *CEANOTHUS COERULEUS* Lag. Rhamnaceæ.

"(No. 296a. Antigua. February 17, 1920.) *Ka-kiish*. Seeds of a large shrub, very similar to the common mountain lilac of southern California. It is abundant on the upper slopes of the Volcan de Agua at altitudes of 6,000 to 8,000 feet, and the dried branches are much used by the Indians of Santa Maria de Jesus as a support for chayote plants, peas, etc. The Indian name, *ka-kiish* (Cakchikel language), probably has reference to this use, as *kiish* is the name of the chayote. The plant may reach 10 or 12 feet in height; it produces panicles up to 4 inches long of fragrant lilac-blue flowers."

49754. *COMBRETUM FARINOSUM* H. B. K. Combretaceæ.

"(No. 341a. El Barranquillo. February 26, 1920. Herb. No. 958.) *Flor de peineta*. Seeds of a climbing plant which bears red flowers in March. The flowers are arranged in long, stiff racemes, which gives the common name *peineta*, or 'comb flower.'"

49745 to 49796—Continued.

49755. *CROTALARIA LONGIROSTRATA* Arn. Fabaceæ.

"(No. 298a. Antigua. February 17, 1920. Herb. No. 950.) *Much*. Seeds of a fine-leaved bushy perennial *Crotalaria* from Santa Maria de Jesus, where it is cultivated in the gardens of the Indians. It is also grown elsewhere in Guatemala. The tender shoots are esteemed as greens and are cooked with meat or added to soups. The plant grows about 5 feet high and has woody branches. *Much* (pronounced 'mooch') is the name used by the Cakchikel Indians."

49756. *CROTALARIA MAYPURENSIS* H. B. K. Fabaceæ.

"(No. 300a. Antigua. February 17, 1920. Herb. No. 944.) Seeds of a shrubby *Crotalaria* about 5 feet high, with large yellow flowers like those of *Crotalaria retusa*. It occurs as a wild plant near Antigua."

49757. *DAHLIA MAXONII* Safford. Asteraceæ.

Dahlia.

"(No. 308a. Antigua. February 20, 1920.) Seeds of a dahlia which the Kekchi Indians of northern Guatemala know as *tzolokh*, while those who speak the Pokonchi language call it *shikor*. Spanish-speaking Guatemalans usually term it *Santa Catarina*. Though extremely abundant, both wild and cultivated, in many parts of the Guatemalan highlands (principally between 3,000 and 7,000 feet altitude) it seems never to have received much attention from botanists; indeed, as Dr. W. E. Safford found in 1919 that it had not yet received a name, he described it as *Dahlia maxonii* in honor of William R. Maxon, of the United States National Herbarium.

"Sometimes the stems reach to 15 or 18 feet and become quite woody toward the base. They terminate in a number of slender branches, each bearing several flowers, not all of which open at the same time. The flowers face outward and upward, as opposed to those of *D. imperialis*, which are distinctly nodding. The color is lilac-pink and the diameter of the flowers commonly 3 to 5 inches.

"When brought into cultivation around the huts of the Indians the species seems to lose its stability. In place of single lilac-pink flowers other forms often appear, and since the plant is easily propagated by cuttings it is a simple matter to reproduce these variations. A single white form is occasionally seen, and a double white and a double lilac are more common.

"When planted in northern gardens this species would be cut down by frost before it had time to reach the flowering stage, though it has in a few instances bloomed in California. (I am assuming that the species I have seen is *D. maxonii*.) In Florida, if the proper soil conditions can be provided, it should prove successful; and there are many places in northern India, in southern Japan, in subtropical Brazil, and numerous other countries where it would find congenial surroundings."

49758. *DAHLIA POPENOVII* Safford. Asteraceæ.

Dahlia.

"(No. 303. Antigua, February 17, 1920.) Tubers collected near Santa Maria de Jesus at an altitude of 6,500 feet.

"This species, which grows in the mountains of central Guatemala at altitudes of 5,000 to 7,000 feet, has been considered by Doctor Safford to be one of the wild parents of the cultivated cactus dahlias. It is a plant rarely exceeding 4 feet in height, with slender stems surmounted by single flowers 2 to 3 inches in diameter, having eight ray florets of

49745 to 49796—Continued.

crimson or orange-crimson. It is interesting chiefly to those engaged in breeding dahlias."

49759. *ERYTHRINA RUBRINERVIA* H. B. K. Fabaceæ.

"(No. 338a. El Barranquillo. February 26, 1920.) *Pito*. Seeds of one of the native Erythrinas. While not so valuable perhaps as a flowering plant as some of its congeners, it has the interesting feature of edible flower buds, and it is a vegetable of some importance among the Guatemalans. The buds are boiled with meat."

49760. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.

"(No. 336a. El Barranquillo. February 26, 1920. Herb. No. 952.) *Guayacán*. Seeds of the Guatemalan lignum-vitæ, a small tree which is covered in February or March with lavender-blue flowers."

For previous introduction, see S. P. I. No. 47900.

49761. *MEDICAGO SATIVA* L. Fabaceæ.

Alfalfa.

"(No. 307a. Antigua. February 20, 1920.) Presented by Don Pedro G. Cofiño, of Antigua. Seeds of a variety of alfalfa which has been grown in Antigua for many years, perhaps introduced in Colonial days. Don Pedro Cofiño has planted *Grimm* and other varieties of alfalfa obtained from the United States, and none of them has given such good results as this native (or acclimatized) stock. He thinks, therefore, that the latter may prove useful in other regions with climatic conditions similar to those of Antigua.

"Alfalfa is grown in Antigua without irrigation, and flourishes even during the driest part of the year. There is no rainfall from October to May, and the total annual precipitation is from 30 to 40 inches. The permanent water table, however, is only 6 to 15 feet below the surface of the soil throughout the valley of Antigua. Alfalfa is cut in the Antigua region every 40 days throughout the year."

49762. *MELIA AZEDARACH* L. Meliaceæ.

"(No. 332a. El Barranquillo. February 26, 1920. Herb. No. 968.) *Paraiso*. Seeds of a tree 25 feet high with small whitish flowers, produced in January."

For previous introduction, see S. P. I. No. 26500.

49763. *PENNISETUM COMPLANATUM* (Nees) Hemsl. Poaceæ.

Grass.

"(No. 305a. Antigua. February 17, 1920.) *Kos-kún*. Seeds of the most important forage grass of the Antigua region. It is especially esteemed by the Indians of San Antonio Aguas Calientes. It makes slender wiry stems up to 6 feet high, with narrow succulent leaves and a foxtail seed head 5 or 6 inches long. It seems to grow well on dry land, though it is much less succulent during the dry season than during the wet."

49764 to 49776. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

49764. "(No. 313a. Guatemala. February 26, 1920.) Seeds of stock plant No. 5 from the Finca La Chacara in Antigua. An apparently very productive tree with nearly spherical fruits averaging a little less than a pound in weight and having an unusually small seed."

49745 to 49796—Continued.

49765. "(No. 314a. Guatemala. February 26, 1920.) Seeds of stock plant No. 4 from the Finca Chacara in Antigua. Bud-wood of this variety was introduced under avocado No. 38 (S. P. I. No. 49739), which see for description."
49766. "(No. 315a. Guatemala. February 26, 1920.) Seeds of stock plant No. 3 from the Finca La Polvora in Antigua. The parent tree is about 30 feet high, broad and spreading. It produced this season about 700 fruits. The fruit is broad pyriform to nearly round; weight of the largest specimens 16 to 18 ounces; length $4\frac{1}{4}$ to $4\frac{1}{2}$ inches; greatest breadth $3\frac{1}{2}$ to 4 inches; base pointed to nearly round, the stem inserted obliquely without depression; apex slightly flattened; surface decidedly rough, deep purplish maroon, almost glossy; dots not conspicuous; skin 1 to 2 millimeters (one twenty-fifth to one-twelfth of an inch) thick, somewhat more flexible than in the average variety of this region; flesh cream-yellow to yellow near the seed, whitish green close to the skin, almost free from fiber discolorations; dry in texture and of rich, pleasant flavor; quality good; seed round to oblate, 3 ounces in weight, tight in the seed cavity with both seed coats closely surrounding the cotyledons. Ripens in midseason."
49767. "(No. 317a. Guatemala. February 26, 1920.) Seeds of stock plant No. 2 from the Finca La Polvora in Antigua. The parent tree is about 35 feet high, erect, almost slender. It produced about 800 fruits this year, which ripened early to midseason. The fruit is oblong-ovoid to obovoid; weight of the largest specimens 12 to 14 ounces; length $4\frac{1}{4}$ to $4\frac{1}{2}$ inches; greatest breadth $3\frac{1}{4}$ to $3\frac{1}{2}$ inches; base slightly flattened to tapering, with the stem inserted to one side or nearly squarely; apex rounded to flattened slightly on one side; surface distinctly pebbled, moss green, with a few large greenish yellow dots; skin $1\frac{1}{2}$ to $2\frac{1}{2}$ millimeters (one-eighteenth to one-tenth of an inch) thick, hard and brittle; flesh cream yellow, very pale green close to the skin, the fiber markings noticeable, flavor strong, the texture a trifle watery; quality fair; seed nearly spherical in outline, 2 ounces in weight, tight in the cavity, with both seed coats adhering closely to the cotyledons."
49768. "Seeds for stock from fruits purchased in the market in Guatemala."
49769. "Seeds for stock from fruits purchased in the market at Guatemala."
49770. "(No. 312a. Guatemala. February 26, 1920.) Seeds of stock plant No. 6 from the garden of an old Indian in San Antonio Aguas Calientes. The parent tree is about 20 feet high, evidently not very old, and is bearing this season a heavy crop, more than 500 fruits. The fruit is broadly ovoid to nearly round, obliquely flattened at the apex; weight about 10 ounces; length $3\frac{1}{2}$ inches, greatest breadth $3\frac{1}{4}$ inches; surface pebbled faintly, deep green with numerous yellow-green dots; skin 1 millimeter (one twenty-fifth of an inch) thick near the stem, becoming 2 millimeters (one-twelfth of an inch) at the apex; flesh cream-yellow, green near the skin, with slight fiber discolorations; flavor rich and oily; seed very large, roundish oblate, tight in the cavity, with both seed coats adhering closely to the cotyledons."

49745 to 49796—Continued.

49771. "(No. 316a. Guatemala. February 26, 1920.) Seeds of stock plant No. 1 from the Finca La Polvora in Antigua. The tree from which the seeds were gathered is very prolific, having produced 450 fruits this season. The fruit ripens early at Antigua."

49772 to 49776. "Seeds for stock; from fruits purchased in the market at Guatemala."

49777. *TRIPLARIS AMERICANA* L. Polygonaceæ.

"(No. 335a. El Barranquillo. February 26, 1920.) *Bailador*. Seeds of a tree said to be 25 feet high, with small white flowers, produced in January."

49778. *PETREA* sp. Verbenaceæ.

"(No. 326a. El Barranquillo. February 26, 1920.) *Palo de amor*. Seeds of a shrub 5 feet high, which produces small purplish flowers in May."

49779. *PHASEOLUS LUNATUS* L. Fabaceæ.

Lima bean.

"(No. 334a. El Barranquillo. February 26, 1920.) *Jurún*."

49780. *SALVIA AMARISSIMA* Ortega. Menthaceæ.

Sage.

"(No. 304a. Antigua. February 17, 1920. Herb. No. 951.) Seeds of an herbaceous plant about 2 feet high, with terminal spikes of small tubular flowers of the richest blue. It is found along roadsides in this region at altitudes of 5,000 to 6,000 feet and is apparently an annual."

49781. *SAPINDUS SAPONARIA* L. Sapindaceæ.

"(No. 324a. El Barranquillo. February 26, 1920.) *Jaboncillo*. Seeds of one of the soapberry trees which grows about 25 feet high, forming a dense crown of deep-green foliage. Its round fruits, about three-fourths of an inch in diameter, can be used in place of soap, but are rarely employed in this way by the natives."

49782. *SOLANUM SEAFORTHIANUM* Andrews. Solanaceæ.

"(No. 340a. El Barranquillo. February 26, 1920. Herb. No. 966.) *Adelfa*. Seeds of a climbing plant, said to produce blue flowers in November."

For previous introductions, see S. P. I. No. 30894.

49783. *TECOMA STANS* (L.) Juss. Bignoniaceæ.

Yellow tecom.

"(No. 337a. El Barranquillo. February 26, 1920. Herb. No. 955.) *Flor amarilla*. Seeds of a plant which may be the common *Tecoma stans* of southern California gardens, but my recollection is that the flower of the latter is not of such a deep yellow as this Guatemalan plant. It is a shrub about 15 feet high, producing terminal clusters of brilliant yellow trumpet-shaped flowers about an inch and a half broad at the mouth."

For previous introduction, see S. P. I. No. 43781.

49784. *TRINIOCHLOA STIPOIDES* (H. B. K.) Hitchc. Poaceæ.

Grass.

(*Muehlenbergia stipoides* Trin.)

"(No. 229a. Antigua. February 17, 1920.) Seeds of a grass from the upper slopes of the Volcan de Agua at altitudes of 7,000 to 8,000 feet. It is about 3 feet high, with fine foliage and small seed."

49745 to 49796—Continued.

49785. VERBESINA MEDULLOSA Robinson. Asteraceæ.

"(No. 323a. El Barranquillo. February 26, 1920.) *Sosa blanca*. Seeds of a shrub or small tree about 10 feet high, which produces in August many small white flowers."

49786. ZEA MAYS L. Poaceæ.

Corn.

"(No. 344a. El Barranquillo. February 26, 1920.) 'Hot country' corn of a small-eared white dent variety."

49787. (Undetermined.)

"(No. 321a. El Barranquillo. February 26, 1920. Herb. No. 962.) *Mescal*. Seeds of a medium-sized tree which produces purplish red flowers in August."

49788. (Undetermined.)

"(No. 342a. El Barranquillo. February 26, 1920.) *Pimientillo*. Seeds of a tree about 15 feet high which produces an abundance of small yellow flowers in December."

49789. (Undetermined.)

"(No. 339a. El Barranquillo. February 26, 1920.) *Quina*. Seeds of a tree about 15 feet high which produces large white flowers in January."

49790. CHEIROSTEMON PLATANOIDES Humb. and Bonpl. Sterculiaceæ.

"(No. 302a. Antigua. February 17, 1920. Herb. No. 948.) *Tayuy*. Seeds of one of the characteristic trees of the upper slopes of the Volcan de Agua. It occurs abundantly at altitudes of about 8,000 to 9,000 feet. It reaches about 50 feet in height and often has a very stout trunk; the wood, however, appears to be soft and of little value. The leaves are 5 to 6 inches long and broad, and the flowers about 2 inches broad, are of most peculiar appearance, with the stamens projecting from the center to simulate a small hand."

49791. (Undetermined.)

"(No. 328a. El Barranquillo. February 26, 1920.) *Fruta de pava*. Seeds of a medium-sized tree which produces purplish flowers in January."

49792. LUEHEA ENDOPOGON Turcz. Tiliaceæ.

"(No. 330a. El Barranquillo. February 26, 1920. Herb. No. 961.) *Tapascahuite*. Seeds of a tree 20 feet high which produces large white flowers in August."

49793. ANTIGONON sp. Polygonaceæ.

"(No. 331a. El Barranquillo. February 26, 1920.) *Colación*. Seeds of a handsome climber with heart-shaped leaves and trusses of coral-pink flowers."

49794. (Undetermined.)

"(No. 333a. El Barranquillo. February 26, 1920.) *Papalotillo*. Seeds of a tree about 20 feet high. The flowers are said to be white and to be produced in January."

49745 to 49796—Continued.

49795. (Undetermined.)

“(No. 320a. El Barranquillo. February 26, 1920.) *Palo giote*. Seeds of a tree up to 40 feet high which produces in January an abundance of small white flowers.”

49796. MYROXYLON ELLIPTICUM (Clos) Kuntze. Flacourtiaceæ.
(*Xylosma ellipticum* Hemsl.)

“(No. 301a. Antigua. February 17, 1920. Herb. No. 943.) Seeds of a thorny red-berried shrub from the mountainside between Antigua and Santa Maria de Jesus. It looks as though it would make a good hedge plant, the leaves being 2 to 3 inches long, of pleasing appearance, and the thorns quite formidable. When in fruit, the red berries, which are about the size of cranberries or coffee berries, but of a lighter color than the former, add greatly to the attractiveness of the plant. Its ultimate height is about 15 feet.”

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM APRIL 1
TO MAY 31, 1920.

(No. 63; Nos. 49797 to 50647.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT IN- TRODUCTION DURING THE PERIOD FROM APRIL 1 TO MAY 31, 1920 (NO. 63; NOS. 49797 TO 50647).

INTRODUCTORY STATEMENT.

This inventory, for the period of April and May, 1920, gives some idea of the voluminous stream of plant immigrants which is now pouring into America unchecked by the war. It represents 15 arrivals for every working day of the period, and when one tries to forecast the future of any 15 new arrivals, the size of this undertaking becomes apparent. To find every day for 15 more or less new plants a suitable home in which they will grow, be studied by some observing mind, and have a chance to prove whether or not they are desirable newcomers would be a decided undertaking in itself; but when one considers that each immigrant is not merely a single individual but represents from a dozen cuttings to a hundred thousand seeds, the real difficulties of the undertaking begin to appear. Not only this: There are the immigrants which have come in earlier and which still require attention. To-day these represent a certain proportion of the more than 50,000 arrivals which have been scattered all over America for the past 23 years, during which period this office has attempted to supervise their arrival and distribution.

While 10,000 amateur and professional agriculturists are on the lists of those who want to take care of these immigrants, the limitations of any one experimenter are soon reached, because the testing of a new introduction takes years and requires more money than many people feel they can afford to spend. But the interest in new plants is bound to grow with our appreciation of the fact that they have great wealth-producing power and that our dooryards and parks, our forests and landscapes, are to mean vastly more to our children than they do to us. With that growth is coming a larger number of experimenters and a greater expenditure of time and money upon this phase of American life.

I find it increasingly difficult to single out the most important introductions from 851 arrivals, particularly since so many of them seem important; but perhaps my long, though often superficial,

acquaintance with them may enable me to do it better than the layman himself, and it is with this idea that I continue to prepare these introductory statements.

The cultivation of Job's-tears as a field grain crop has been proposed for tropical and subtropical regions, but I think P. J. Wester has furnished the first report of its yields. In Mindanao, where several varieties are grown by the natives in a limited way, one variety (*Coix lacryma-jobi ma-yuen*; No. 49798) yielded 3,230 pounds per acre.

The bulso (*Gnetum indicum*; No. 49799) is a climber which bears brick-red fruits like grapes, each containing a seed which when roasted tastes like a chestnut. In Java its close relative, *G. gnemon*, is used as a pickle with the "rijs tavel."

The sokwa grass of Nigeria (*Echinochloa stagnina*; No. 49845), which, according to Alfred Thompson, is adapted to low swamp lands and is so sweet that children like to chew it and horses prefer it to Guinea corn, may prove valuable for Porto Rico, Hawaii, or even for the Everglades of Florida.

The guar of Burma (*Cyamopsis tetragonoloba*; Nos. 49864 and 49899 to 49904) is, according to Professor Piper, more drought resistant than any other annual legume and will grow in any part of the country where cowpeas succeed; it may be utilized as hay, or pasturage, or silage; its green pods are also used as a vegetable. It deserves more serious consideration than has heretofore been given it.

Mr. Wester's introduction of the silani (*Vigna lutea*; No. 49870), a new leguminous vine with possibilities as an orchard cover crop for citrus orchards, will interest Florida growers.

The success of the beautiful Australian vine (*Cissus hypoglauca*; No. 49871) on Miss Kate Sessions's place at San Diego, Calif., where it is one of the most attractive of pergola vines, makes its wide distribution most desirable.

H. E. Allanson calls attention to a quick-maturing variety of watermelon (*Citrullus vulgaris*; No. 49872), the seed of which was sent by Mr. Voyerikoff, of Vladivostok. At Chico, Calif., it matured fruits in 45 days from seed.

Capt. F. Kingdon Ward, the English explorer, sends from the Htawgaw Hill tracts of Burma a promising plumlike fruit (No. 49886) which so far has not been determined botanically, but which seems suited to regions of perpetual cool climate and rainy weather, like the Puget Sound region, and is a good table fruit even in its wild state.

The Chilgoza pine (*Pinus gerardiana*; No. 49889), from the dry, arid valleys of the northwestern Himalayas at 6,000 to 12,000 feet altitude, yields a large edible seed suited for table use, and like our

piñon may grow in the valleys of Arizona and California; because of the size of its nuts it may also be valuable commercially.

The Australian quandong (*Mida acuminata*; No. 49893) which is said to have wonderful drought-enduring qualities, growing as it does in the hotter, drier parts of New South Wales, should attract horticulturists of Arizona and California if its fruits, as reported, make preserves resembling that of the guava.

Dr. H. L. Shantz continues in this inventory the notes on material collected by him while attached as Agricultural Explorer of the Bureau of Plant Industry to the Smithsonian expedition to central and East Africa. The hurried nature of his trip of reconnaissance, in which he covered in a year's time an area nearly four times the extent of the whole Atlantic seaboard of the United States, made it impossible for him to get complete data on many of the things he collected, and this fact explains the fragmentary nature of many of his notes.

The remarkable behavior of kafirs and other sorghums and Sudan grass from Africa made it seem possible that strains of these important cereal and forage crops might be found which would be superior to those already introduced. Consequently Doctor Shantz collected samples of these from the various regions which he visited (*Holcus* spp.; Nos. 50008 to 50019 and 50077 to 50079). He also obtained seeds of the mombo tree (*Brachystegia* sp.; No. 50207), the bark of which furnished the natives with cloth before calicos were imported.

Pachylobus sp. (No. 50243), a forest tree bearing nuts that are edible after boiling, and *Ricinodendron* sp. (No. 50270), bearing sweet-fleshed fruits with edible oily kernels, are two other new and promising introductions resulting from Doctor Shantz's exploration.

Dr. E. D. Merrill, director of the Bureau of Science in Manila, has sent in a blue-flowered *Lobelia* (*L. nicotianaefolia*; No. 50314) which grows to be more than 9 feet tall and should be useful for breeding purposes, even if not adapted for outside culture in this country.

Dr. Carlos Spegazzini, of La Plata, Argentina, has presented 10 species of *Prosopis* (Nos. 50092 to 50101), leguminous trees and shrubs, the pods of some of which are very valuable as stock feed.

J. Burt Davy made for us, just before he left South Africa, a collection of trees, shrubs, and grass seeds covering 105 numbers (Nos. 50102 to 50206). Among them are many which may contribute to the afforestation problem of the Hawaiian Islands and several which, because of their edible fruits, may prove of value in California and southern Florida; these include the mupundu (*Parinari mobola*; No. 50167), the mahobohobo (*Uapaca sansibarica*; No. 50190), three species of jujube (*Ziziphus* spp.; Nos. 50196 to 50198), *Balanites aegyptiaca* (Nos. 50120 and 50121); and *Mimusops zeyheri* (Nos. 50163

to 50165). He also sends in nine species of coffee (*Coffea* spp.; No. 50625 to 50633) from the Kongo and other parts of Africa.

The South China tung oil is made from the seeds of the mu-yu sh (*Aleurites montana*; No. 50353) and the central China tung oil from that of *A. fordii*; both appear to be used more or less indiscriminately by the varnish trade. Together these oils represent the basic materials used by a 25-million-dollar industry, and the culture of these two Chinese trees deserves to be undertaken seriously in America.

G. H. Cave, of Darjiling, India, has presented us with seeds of 10 interesting trees and shrubs from the Himalayas, among which is the *Docynia indica* (No. 50364), a small tree with edible fruits resembling the quince in flavor. This might prove peculiarly adapted to the Puget Sound region, and *Pueraria peduncularis* (No. 50371), a relative of the kudzu vine of Japan, might grow there also.

Mr. Wester sends a new leguminous tree (*Prosopis vidaliana*; No. 50381) which should be worth trying on the Florida beaches.

Dr. Argollo Ferrão sends in a remarkable variety of cassava (*Manihot esculenta*; No. 50388) which is known as the "manioc of 10 years," because it may remain 10 years in the ground and produce roots that weigh more than 500 kilograms (1,102.3 pounds) per tree.

The late Sr. André Goeldi, of Para, Brazil, presented the United States Department of Agriculture with 52 varieties of seeds which he collected at the mouth of the Amazon. Among them is the macaúba palm (*Acrocomia sclerocarpa*; No. 50467), the seeds of which when roasted make a good table nut. Since the genus to which this palm belongs does unusually well in southern Florida, there may be in the macaúba a valuable food tree for that region. The assahy palm (*Euterpe oleracea*; No. 50481), from the fruits of which a wine is made, and the pupunha (*Guilielma speciosa*; No. 50482), whose fruits have a mealy covering which when cooked is said to be more delicate than potatoes or chestnuts and to combine the qualities of both, may prove further valuable additions to the economic palms of Florida. There is also a species of *Cissus* in the collection, a tropical grape (No. 50474) with fruits having the flavor of the Isabella. It is well worth finding out whether the cutitiribá, a species of *Lucuma* (*L. macrocarpa*; No. 50487) with fruits 4 inches across, and the cacau-y (*Theobroma speciosa*; No. 50510), a deliciously flavored fruit related to the cacao, will grow in this country. *Oryza latifolia* (No. 50491), a perennial wild rice from Marajo, growing to 8 feet in height and bearing seeds the whole year round, may have value as a forage crop on wet soils.

Hugh Dixon, of New South Wales, has brought to our attention what appears to be a very valuable ornamental climber (*Millettia megasperma*; No. 50518), which resembles the wistaria but has

dark-green foliage and darker purple, sweet-scented flowers. As it will stand 10 degrees of frost, it should thrive remarkably well in California and Florida.

Wilson Popenoe and Otón Jimenez believe they have discovered, near San Jose, Costa Rica, the wild prototype of the Guatemalan race of avocados in what is known there as the aguacate de anís (*Persea americana*; No. 50585), and they predict that it will prove valuable as a stock for the cultivated avocado.

James Birch Rorer, of Guayaquil, Ecuador, has sent in a number of interesting plants from that little-known country, among them the capulin (*Prunus serotina*; No. 50604), or wild cherry, a promising new fruit resembling the Bigarreau type of cherry, refreshing to eat out of hand, and also the naranjilla (*Solanum quitoense*; No. 50607), a solanaceous fruit sold on the markets there.

Harry Johnson has collected from around Coban, Guatemala, some interesting wild plants which should yield valuable forms for cultivation. Among them are five begonias (Nos. 50609 to 50613), a morning-glory (*Ipomoea* sp.; No. 50615) with yellow-throated pink flowers of a thick succulent texture, a tender night-blooming water lily (*Nymphaea blanda*; No. 50617), and a wild solanaceous vine (*Solanum* sp.; No. 50620).

The botanical determinations of seeds introduced have been made and the nomenclature determined by H. C. Skeels; and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript has been prepared by Miss Esther A. Celander and Miss Patty T. Newbold.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 24, 1921.

INVENTORY.¹

49797. CACARA EROSA (L.) Kuntze. Fabaceæ. Yam bean
(*Pachyrhizus angulatus* Rich.)

From San Salvador, Salvador. Seeds presented by J. E. van der Laat, Director General of Agriculture. Received April 1, 1920.

"Seeds of the white-flowered *jicama*, which is the best yam bean. It is cultivated widely and is relished very much in the raw state." (*Van der Laat*.)

For previous introduction, see S. P. I. No. 47146.

49798 and 49799.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received April 1, 1920. Quoted notes by Mr. Wester.

49798. COIX LACRYMA-JOBI MA-YUEN (Rom.) Stapf. Poaceæ. Ma-yuen.

"Seeds of *adlay*, a grain which I believe is worthy of serious attention in Porto Rico and the Gulf States. Preliminary trials here have yielded at the rate of 3,625 kilos of grain to the hectare (3,230 pounds per acre), the hulled grain of which is 2,610 kilos. An analysis made by the Bureau of Science returned 49.86 per cent starch, 8.23 per cent protein, and 8.87 per cent fat. The returns from the hulled grain were 68.83, 11.27, and 6.65 per cent, respectively. At present *adlay* is grown in a limited way in Bukidnon and Cotabato in Mindanao and in the Mountain Province in Luzon. There are probably some 10 varieties cultivated in these islands."

49799. GNETUM INDICUM (Lour.) Merr. Gnetaceæ.
(*G. funiculare* Blume.)

"The *bulso*, a native woody vine with brick-red fruits in bunches like grapes, each containing a nut which, when roasted, tastes like a chestnut. The nuts should not be eaten raw. This is a close relative to the *banago* (*Gnetum gnemon*)."

49800. TRITICUM AESTIVUM L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

From Rieti, Italy. Presented by Prof. Nazarene Strampelli, director, R. Stazione Sperimentale di Granicoltura. Received April 1, 1920.

Carlotta Strampelli. A very early winter wheat originated by Professor Strampelli, sown upon about 47,000 acres in 1918-19. Secured for Dr. C. E. Leighty, Agronomist in Charge of Eastern Wheat Investigations, for use in experimental work.

¹ All introductions consist of seeds unless otherwise noted.

It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases, undoubtedly, be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

49801 to 49803. HOLCUS SORGHUM L. Poaceæ. Sorghum.*(Sorghum vulgare Pers.)*

From Kaduna, Northern Provinces, Nigeria. Seeds presented by P. H. Lamb, Director of Agriculture, through C. V. Piper. Received April 7, 1920. Notes furnished by H. N. Vinall, Office of Forage-Crop Investigations.

49801. "Native name *fara-fara*. Variety with loose panicles about 13 inches long and 3 inches in diameter. Seeds white, flat, rotating in the glumes and shattering freely like *shallu*; glumes black, spreading, and involute."

49802. "Native name *kaura*. Variety with rather compact panicles like kafir, 14 to 15 inches long and 2½ to 3 inches wide. Seeds somewhat larger than kafir, of a very peculiar yellowish white color like pop corn, and 60 to 75 per cent exserted from the straw-colored glumes."

49803. "Native name *jauari*. A variety with loose panicles about 15 inches long and 3 inches wide. Much like the *fara-fara* except that the seeds are red instead of white. Resembles a red-seeded *shallu*."

49804 to 49813.

From Paris, France. Seeds presented by D. Bois, Professeur de Culture, Muséum d'Histoire Naturelle. Received April 27, 1920, for use in rust investigations.

49804. TRITICUM CYLINDRICUM (Host.) Ces. Pass. and Gib. Poaceæ. Grass.

"A slender tufted suberect European annual, 25 to 50 centimeters tall, with unbranched culms, narrow, flat, rough blades, and solitary slender cylindrical spikes 5 to 15 centimeters long." (*Agnes Chase*.)

49805. BROMUS MACROSTACHYS LANUGINOSUS (Poir.) Coss. and Dur. Poaceæ. Grass.

An erect *Bromus* with lanceolate, pointed, somewhat compressed woolly spikelets. Native to the Mediterranean region. (Adapted from *Poiret, Encyclopédie Méthodique Botanique, supplement, vol. 1, p. 703*.)

For previous introduction, see S. P. I. No. 16042.

49806. BROMUS MADRITENSIS L. Poaceæ. Grass.

A tall, tufted, compact grass locally adventive from Europe.

49807. HORDEUM MARITIMUM Roth. Poaceæ.

A species of barley grass occurring on the seacoasts of western Europe and in the Mediterranean region, extending northward to Denmark. It is known as "sea barley," and in England it is also called "squirreltail grass." It occurs in meadows, especially in brackish land along the seacoast, but is also found sometimes in mountainous regions. (Adapted from *Bentham and Hooker, Handbook of British Flora, 6th ed., p. 528*, and *Boissier, Flora Orientalis, vol. 5, p. 687*.)

49808. HORDEUM VULGARE COELESTE L. Poaceæ. Barley.

This is probably the barley which, in Europe at least, was formerly the most widely cultivated form.

49809. CLEMATIS INTEGRIFOLIA L. Ranunculaceæ. Clematis.

An erect herb, bearing rather narrow, blue, leathery flowers.

For previous introduction, see S. P. I. No. 32239.

49810. CLEMATIS VITICELLA L. Ranunculaceæ. Clematis.

A European climber, 8 to 12 feet high, with blue, purple, or rose-purple flowers, a leading garden clematis.

49811. RANUNCULUS ACRIIS L. Ranunculaceæ.

The tall or meadow buttercup.

49804 to 49813—Continued.

49812. *RANUNCULUS BULBOSUS* L. Ranunculaceæ.

A perennial about 1 foot high, one of the common field buttercups; naturalized in the United States from Europe.

49813. *THALICTRUM MEDIUM* Jacq. Ranunculaceæ.

A European plant with a leafy stem and spreading panicles of nodding flowers.

49814. *SYNTHESISMA SANGUINALIS* (L.) Dulac. Poaceæ. Grass

From Kirkee, Poona, India. Seeds presented by William Burns, Government economic botanist. Numbered June, 1920.

A form introduced for experimental work by the Office of Forage-Crop Investigations.

49815 to 49823.

From Johannesburg, South Africa. Seeds presented by J. Burt Davy, Vereeniging. Received April 22 and 28, 1920. Quoted notes by Mr. Burt Davy.

49815. *ASPARAGUS LARICINUS* Burchell. Convallariaceæ.

"A fine bushy plant, 5 feet high; ornamental and possibly edible; hardy."

49816. *CAILLIEA NUTANS* (Pers.) Skeels. Mimosaceæ.

(*Dichrostachys nutans* Benth.)

"Hardwood, small tree for Hawaii."

49817. *ERYTHRINA CAFFRA* Thunb. Fabaceæ.

"Deciduous, ornamental, red-flowered tree: grows quickly and easily from cuttings. Used for live fences. Sensitive to frost. Grows on dry, rocky hills; 20-inch rainfall."

49818. *LEBECKIA* sp. Fabaceæ.

"Perennial legume; winter region rainfall area: Hermanus, Cape Province."

49819. *PENTZIA INCANA* (Thunb.) Kuntze. Asteraceæ.

Karoo bush

"Good karroo; splendid sheep feed for low-rainfall region."

49820. *PHASEOLUS ACUTIFOLIUS LATIFOLIUS* G. F. Freeman. Fabaceæ.

Tepary bean

"Small bean; very prolific. Used as dry beans in place of haricots."

49821. *SPOROBOLUS* sp. Poaceæ.

Grass

"A useful grass."

49822. *VANGUERIA INFAUSTA* Burchell. Rubiaceæ.

"Misple. Edible fruit worth improvement: grows in frostless localities on dry, rocky hills, with rainfall of about 20 inches (summer precipitation)."

49823. *VITIS* sp. Vitaceæ.

Grape

"Wild grape from Bushman's River, Alexandria Division, Cape Province. Edible and worth careful cultivation in the United States."

49824. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ.

Taro

From Honolulu, Hawaii. Tubers presented by R. A. Goff, through J. M. Westgate, agronomist in charge, Hawaii Experiment Station. Received May 13, 1920.

"*Kuoho*. This is one of the most largely grown upland taros in the vicinity of Hilo, Hawaii. The buds, skin, and the flesh immediately beneath the skin are bright red. The flesh is very acrid in the raw state, but this quality is destroyed in cooking and

the taro becomes mealy and of good flavor; the flesh is grayish when cooked. The *Kuoho* taro, like other commercial varieties in Hawaii, is used mostly for making poi, the great Hawaiian dish." (R. A. Young.)

49825. DIOSCOREA ALATA L. Dioscoreaceæ.

Yam.

Grown with other unidentified yams under S. P. I. No. 45990 at the Plant-Introduction Garden, Brooksville, Fla., since 1918, and numbered separately on May 15, 1920, to facilitate distribution.

"A white-fleshed yam of excellent quality. It cooks perfectly white and when mashed and beaten with milk is fully equal to the best white potato. Tested after about four months in storage." (R. A. Young.)

49826. COLOCASIA ESCULENTA (L.) Schott. Araceæ.

Taro.

Corm presented through Dr. David Griffiths by A. Miller, of the American Bulb Co., Chicago, Ill., who obtained it from Japan. Received May 18, 1920.

"A taro which forms a multiple-headed nonacrid corm." (R. A. Young.)

49827. ANACARDIUM OCCIDENTALE L. Anacardiaceæ.

Cashew.

From the city of Panama, Panama. Nuts presented by Sr. Ramon Arias-Feraud. Received April 1, 1920.

"The cashew has fruited successfully at Miami and Coconut Grove, Fla., and should be more widely planted, both for its aromatic fruits, which can be used in a variety of ways, and for its edible seed, known as cashew nut. It is a variable plant, but so far as known, selected varieties have not yet been propagated vegetatively." (*Proceedings of the American Pomological Society, 1915, p. 192.*)

49828 to 49833. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

From Yokohama, Japan. Beans presented by Robert Fulton & Co. Received April 2, 1920. Quoted notes by Mr. Fulton.

49828. "*Kuro mame* (black soy bean)."

49829. "*Kuro Teppo mame* (round, middle-late, black soy bean)."

49830. "*Nakate mame* (middle-late, white soy bean), seed larger than *Wase mame*."

49831. "*Okute mame* (late white soy bean)."

49832. "*Shiro daizu* (white soy bean)."

49833. "*Wase mame* (summer bean), small seeded early white."

49834. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

From Aizu Wakamatsu, Japan. Beans presented by Rev. Christopher Noss. Received April 2, 1920.

"*Ogon daizu* (golden soy bean)." (Noss.)

The oil of the bean is used for frying, as a butter substitute, for lubricating, for waterproofing clothes, for medicine, and in the manufacture of soap, candles, guncotton, and artificial rubber. The residue after the oil has been extracted has been used for cattle feed, but is now mixed with wheat flour for food purposes. The entire bean is slightly roasted, pulverized, and mixed with flour to make light cakes and to give flavor to boiled rice; it is cheaper and more nutritious than flour. (Adapted from Parry, *Travel Sketches, Japan Advertiser, January 25, 1920.*)

49835. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple**

From Kabalo, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 1, 1920.

"(Kabalo, February, 1920.) Suckers from pineapples grown about native cabins. (Shantz.)"

49836 to 49839.

From Elizabethville, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 3, 1920. Quoted notes by Doctor Shantz.

49836. AGAVE AMERICANA L. Amaryllidaceæ.

"(No. 364. Elizabethville. December 27, 1919.) One of the chief fiber plants of this section; the fiber is said to be whiter than sisal, which is also grown here."

49837. AGAVE SISALINA Perrine. Amaryllidaceæ.

"(No. 365. Elizabethville. December 27, 1919.) This plant does very well here, producing leaves 5 feet long, but the market is not good."

49838. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.**Cassava**

(*M. utilisissima* Pohl.)

"(No. 363. Elizabethville. December 27, 1919.) This is a cool country for Manihot, and these plants may prove to be better for cool climates than those grown in South America or the lower Kongo. Here it is one of the principal articles of native diet. Its worst enemy is the porcupine."

49839. (Undetermined.)

"(Elizabethville, December, 1919.) Three small tubers."

49840. ERIOBOTRYA JAPONICA (Thunb.) Lindl. Malaceæ. **Loquat**

From Olive, Calif. Cuttings presented by M. Payan. Received April 6, 1920.

Eulalia. This variety was originated by Mr. Payan from seeds of the *Advance* variety, planted by him in 1897. It is reported to be a rather vigorous grower, spreading and productive, and thus far has shown no blight. The following is a detailed description of the fruit:

Form truncate pyriform to obovoid pyriform, borne in large, rather loose terminal clusters on stout woolly stems inserted without depression; surface smooth, sparsely covered with light down; apex depressed; basin irregular, abrupt, corrugated; calyx segments broad, short, downy, converging; eye medium, partially open; color orange yellow, blushed, and washed with red when tree ripened, and overspread with a thin bloom; dots numerous, aureoled, light gray; skin thick, tough, acid; flesh pinkish translucent, melting, tender, very juicy; seeds of medium size, rather numerous, flavor subacid; quality good. Season, February to May in Orange County, Calif. (Adapted from *Yearbook, U. S. Department of Agriculture, 1905, p. 504.*)

49841 and 49842.

From New South Wales, Australia. Seeds presented by Hugh Dixon, Aberfeldie. Received April 1, 1920. Quoted notes by Mr. Dixon.

49841. ANGOPHORA CORDIFOLIA Cav. Myrtaceæ.

"An Australian plant which grows in rather poor sandy sandstone country, seldom above 8 feet in height. A plant I have flowered in two years at about 3 feet high; it has large bunches of cream-white eucalyptuslike flowers with honey perfume, very attractive to bees and other insects. Young plants must not be cut back, for there is apparently no bud at the base of the leaves till it

49841 and 49842—Continued.

reaches flowering stage. These seeds are about 2 years old. I have raised plants from this lot within the past month. Ten degrees of frost should not hurt them when above the seedling stage."

49842. EUCALYPTUS FICIFOLIA F. Muell. Myrtaceæ.

"A western Australian plant, commonly known as the red flowering gum. It will take at least five or six years to reach the flowering stage, but it is a blaze of scarlet when it does. The few trees I have seen flowering in the vicinity of Sydney were not above 10 to 15 feet high, with about the same spread. I think that they have been checked to make them spread. They grow in any fair soil, and 10 degrees of frost should not hurt the plants when above seedling stage. The seed takes three years to ripen, though I have just raised a plant or two from 2-year-old capsules grown near here."

A rare and showy plant with a striking display of brilliant scarlet flowers in branching heads. They are produced from a cup-shaped receptacle provided with a capsule which falls off as the flowers expand. When the flower is fully open the green interior of the receptacle is seen, which adds to the beauty of the flower. The gray-green leaves, with red midribs, are also handsome. (Adapted from *The Garden*, vol. 71, p. 441.)

49843 to 49846.

From Yola, Northern Provinces, Nigeria. Seeds presented by Alfred Thompson. Received April 2, 1920. Quoted notes by Mr. Thompson.

49843. ANNONA SENEGALENSIS Pers. Annonaceæ. Abo.

"The natives call this 'wild papaw.' It is the nicest wild fruit we have in our part of Africa."

"A shrub or tree, sometimes attaining a height of 8 meters, indigenous to a large part of tropical Africa. It ascends Mount Ruwenzori to an altitude of 2,600 meters. The fruit is 4.5 centimeters in diameter, yellowish or orange colored, and much esteemed by some travelers. It is believed that the wood of this species was used by the negro tribes on the upper Nile for making fire by friction as early as 2,900 B. C." (*P. J. Wester.*)

For previous introduction, see S. P. I. No. 47214.

A fruiting shrub of this species is shown in Plate I.

49844. ARACHIS HYPOGAEA L. Fabaceæ. Peanut.

"They grow a lot of peanuts in this part of Africa, but I do not think they are as good as those grown in America."

For previous introduction, see S. P. I. No. 47865.

49845. ECHINOCHLOA STAGNINA (Retz.) Beauv. Poaceæ. Grass.

"The natives call this grass 'sokwa.' It is the best kind of grass we have in this part of Africa. The horses as a rule will eat this grass before they will eat guinea corn. It is sweet like sugar cane, and the children like to chew it. It grows in low swamp land and in the wet season is often covered with 7 feet of water. When the water goes down the natives cut it or turn the cattle on it. One thing against it is that it grows to a height of about 7 feet and when the water goes down it lodges so that to cut it with a machine would be very hard."

For previous introduction, see S. P. I. No. 48427.

49846. GOSSYPIUM sp. Malvaceæ. Cotton.

"The African cotton is very poor, as you can see by the specimen I am sending you."

49847 to 49849.

From Foochow, Fukien, China. Cuttings presented by C. R. Kellogg, through J. B. Norton. Received April 3, 1920. Quoted notes by Mr. Kellogg.

49847. ACTINIDIA sp. Dilleniaceæ.

"(No. 1, January 26, 1920.) From an old house in Kuliang."

49848. ACTINIDIA sp. Dilleniaceæ.

"(No. 2, January 26, 1920.) Near an old potato field, Kuliang."

49849. FICUS sp. Moraceæ.

"A wild fig."

Fig.

49850. CAJAN INDICUM Spreng. Fabaceæ.

Pigeon-pea.

From Honolulu, Hawaii. Seeds presented by J. M. Westgate, director, Agricultural Experiment Station. Received April 5, 1920.

"White variety; germination 25 per cent. March 3, 1920." (*Westgate.*)

49851. CITRUS sp. Rutaceæ.

From Nagpur, Central Provinces, India. Budwood presented by J. C. Leslie, superintendent, Government gardens. Received April 5, 1920.

R. S. Woglum, of the Bureau of Entomology, visited India in 1913, and states concerning this orange: "The *Nagpur* orange is a large, loose-jacketed orange of the tangerine group."

49852 and 49853.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received April 6, 1920.

49852. BARLERIA LUPULINA Lindl. Acanthaceæ.

A very handsome hothouse plant, native to Mauritius, almost always in flower and particularly remarkable for its rich, deep-green, lanceolate leaves marked with bright-red midribs. It forms a very compact leafy bush 2 feet in height, is not attacked by common hothouse insects, thrives in almost any soil with little or no cultivation, and is readily propagated from cuttings. (Adapted from *Edwards's Botanical Register*, pl. 1483.)

49853. BARLERIA PRIONITIS L. Acanthaceæ.

An attractive shrub, native to Asia and tropical Africa, 2 to 3 feet in height, with bright orange-yellow flowers. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 391.)

For previous introduction, see S. P. I. No. 20974.

49854 to 49857.

From Kulare, via Cairns, Queensland, Australia. Seeds presented by J. A. Hamilton. Received April 6, 1920. Quoted notes by Mr. Hamilton, unless otherwise specified.

49854. CASUARINA TORULOSA Ait. Casuarinaceæ.

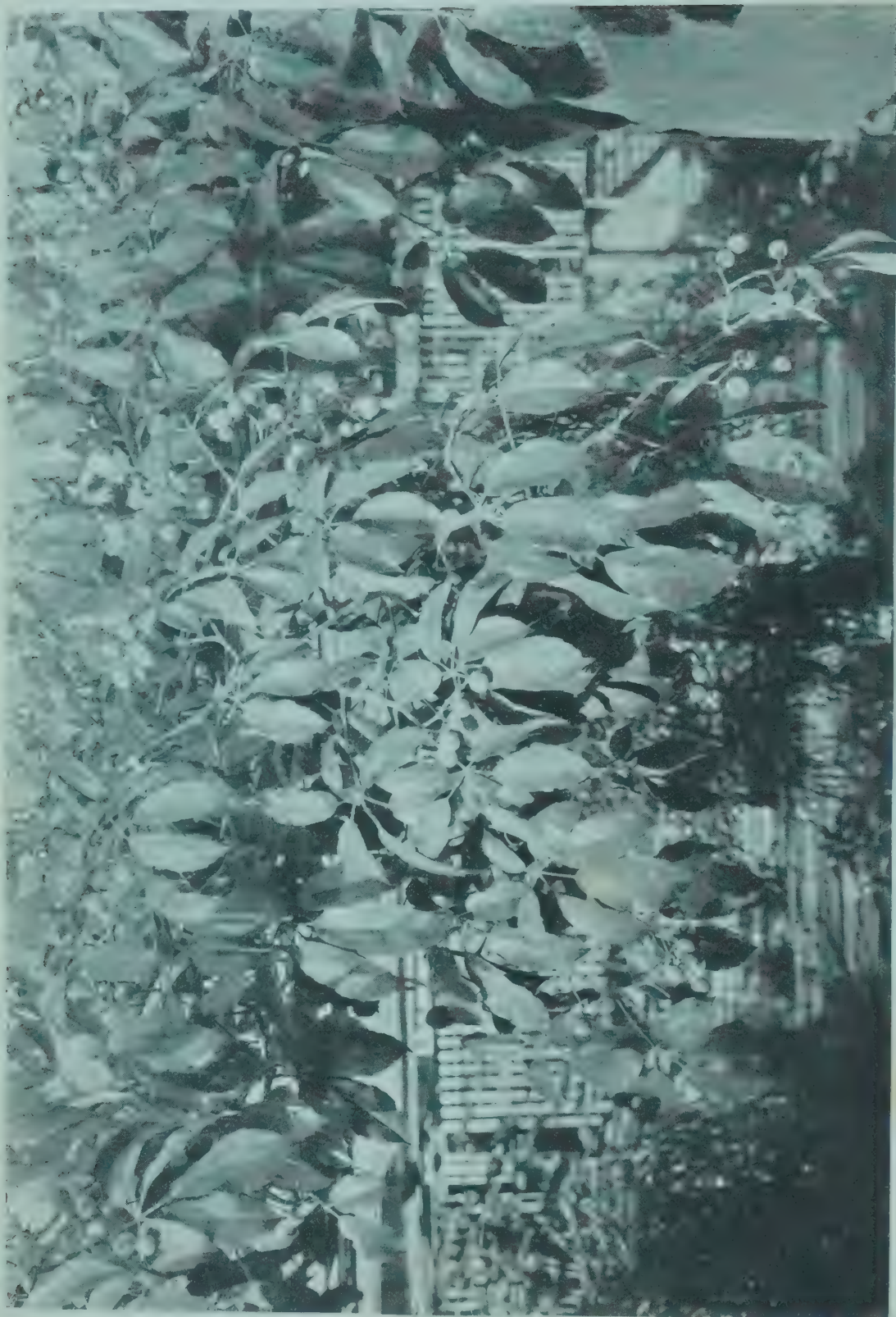
The wood of this tree is close grained and very prettily marked. It is used for cabinetwork and produces very superior shingles. Handsome veneers are obtained from the wood. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 400.)

For previous introduction, see S. P. I. No. 30380.



THE ABO, AN AFRICAN ANONA. (*ANNONA SENEGALENSIS* PERS.; S. P. I. No. 49843.)

This species is said to vary remarkably, some forms being low shrubs not more than 2 or 3 feet in height, like the one shown above, and others trees 30 feet tall. The yellowish or orange-colored fruits, about the size of small apples (2 to 2½ inches across), have a delicious flavor, which makes them very popular with travelers in tropical Africa. If this shrub will bear in southern Florida or California it may become a valuable winter fruit in those regions. (Photographed by Dr. H. L. Shantz, Kafue, Northern Rhodesia, November 21, 1919; P36765FS.)



A BEAUTIFUL AUSTRALIAN VINE FOR PERGOLAS. (*CISSUS HYPOGLAUCA* A. GRAY: S. P. I. No. 49871.)

This handsome Australian climber is evergreen in San Diego, Calif., and will probably hold its foliage wherever it can be grown. The black fruits, which are produced abundantly, add greatly to its attractiveness. The plants will endure some frost, and it is not unlikely that

49854 to 49857—Continued.

49855. *EUCALYPTUS* sp. Myrtaceæ.

"Flooded gum. This species likes plenty of moisture, but grows on poor soil. It grows very straight and is the largest eucalyptus which grows on this table-land."

49856. *EUCALYPTUS TERETICORNIS* J. E. Smith. Myrtaceæ.

"This must be fairly hardy, as we get rather hard frost here at night in winter. The most noticeable feature in the habit of *Eucalyptus tereticornis* is that of flowering in the winter; last winter the trees began flowering at the end of May and trees were in flower until the end of September."

For previous introduction, see S. P. I. No. 38728.

49857. *PHASEOLUS AUREUS* Roxb. Fabaceæ.

Mung bean.

"Green Chinese variety."

49858. *TRICHOSANTHES QUINQUANGULATA* A. Gray. Cucurbitaceæ.

From Littleriver, Fla. Seeds presented by J. J. Soar, Littleriver Nurseries, through Dr. David Fairchild. Received April 7, 1920.

"These seeds were given to me by Mr. Soar, who says that the plant came from the Philippines. It is the showiest gourd I have ever seen, being a bright red, redder than the reddest apple. As a decorative plant it should be very valuable, and the fruits would make the prettiest kind of decorations for Christmas trees." (Fairchild.)

For previous introduction, see S. P. I. No. 43266.

49859 to 49860.

From Melbourne, Victoria. Seeds presented by F. H. Baker. Received April 7, 1920.

49859. *DORYANTHES PALMERI* W. Hill. Amaryllidaceæ.

A gigantic showy amaryllid with very numerous ribbed leaves 6 to 8 feet long and 4 to 6 inches wide. The stem or scape is 8 to 10 feet high and bears a compact inflorescence 3 feet long, composed of short, few-flowered spikes. The scarlet perianth segments are pale red within. Native to New South Wales. (Adapted from *Curtis's Botanical Magazine*, pl. 6665.)

For previous introduction, see S. P. I. No. 23433.

49860. *EUCALYPTUS ALPINA* Lindl. Myrtaceæ.

A rare, slow-growing, shrubby eucalypt with stout branches, thick, oval, or roundish shining dark-green leaves, and rather large almost hemispherical fruits. It is restricted in distribution to the summit of Mount William, Western Australia, at an altitude of over 4,000 feet. It endures quite a cold climate and braves sharp frosts and snowstorms several months in the year. (Adapted from *Mueller, Eucalyptographia*, vol. 2, p. 1.)

For previous introduction, see S. P. I. No. 38709.

49861. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

From the City of Mexico, Mexico. Suckers presented by the Dirección de Agricultura. Received April 8, 1920.

Guatemala Spineless White.

"This variety has a number of points which would commend it for our use; it is spineless, ripens early, has a delicious flavor, and is apparently a good shipper." (P. H. Rolfs.)

For previous introduction, see S. P. I. No. 14452.

49862. PYRUS CALLERYANA Decaisne. Malaceæ.**Pear.**

Seeds collected under the direction of Prof. J. H. Reisner, of Nanking, China.

Received April 8, 1920.

This seed is a small quantity reserved from a shipment ordered by this office for Jackson & Perkins, of Newark, N. Y., who desired to conduct experiments with *Pyrus calleryana* as a stock for our common pears. According to Professor Reisner, it is very difficult to secure pure seed of this species. This lot was collected about 40 miles from Nanking. Every effort was made to secure seed only from authentic trees of *Pyrus calleryana*.

49863. BICHEA sp. Sterculiaceæ.

(*Cola* sp.)

From Malele, Belgian Kongo. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 3, 1920.

"(No. 522. Malele. January 31, 1920.) Called by the whites 'native potato,' but the natives say it grows on a large tree. The pod is about 6 inches long with two rows of very large seeds; they are said to be very good food. The old pods are often gathered from the forest floor, and this has probably resulted in the use of the term 'native potato.' " (Shantz.)

49864. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ.**Guar.**

(*C. psoraloides* DC.)

From Mandalay, Northern Circle, Burma, India. Seeds presented by E. Thompson, Deputy Director of Agriculture. Received April 12, 1920.

"An erect East Indian annual legume with long straight stems bearing an enormous number of pods which do not burst open at maturity. The plant is usually 3 or 4 feet high, but under favorable conditions it reaches a height of 5 to 6 feet. Each pod contains about seven pale angular seeds.

"In India the plant is grown both for green forage and for the seeds which are used mainly to fatten cattle, and also as human food. The green pods are also used as a vegetable in the same manner as string beans.

"Guar may be grown in any part of the country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or silage." (C. V. Piper.)

For previous introduction, see S. P. I. No. 43503.

49865. PASPALUM FASCICULATUM Willd. Poaceæ.**Grass.**

From Coban, Guatemala. Seeds presented by Gustav Helmrich at the request of Wilson Popenoe. Received April 19, 1920.

"*Oxay*. This grass is used here as cattle feed. It is generally propagated by suckers; among thousands of plants very few produce any flowers, and I do not know if the seeds germinate." (Helmrich.)

49866 to 49869.

From Christiania, Norway. Seeds presented by Dr. N. Wille, director, Botanical Garden. Received April 25, 1920.

49866. ANCHUSA OFFICINALIS L. Boraginaceæ.

The common European alkanet, a biennial or perennial plant 1 to 2 feet high with hairy leaves and bright-blue or purple flowers opening in pairs on loose one-sided spikes. Effective in masses and of easy cultivation.

49866 to 49869—Continued.

49867. CERINTHE MINOR L. Boraginaceæ.

A European plant with yellow or purple spotted flowers in long racemes. (Adapted from *Boissier, Flora Orientalis*, vol. 4, p. 148.)

— 49868. RANUNCULUS GLACIALIS L. Ranunculaceæ.

A plant 3 to 6 inches in height, with beautiful silky white flowers suffused beneath with purple; native to the Arctic regions of Europe, Asia, and America, at altitudes of 6,500 to 13,000 feet. (Adapted from *Gardeners' Chronicle*, third series, vol. 53, p. 117.)

49869. THALICTRUM ANGUSTIFOLIUM L. Ranunculaceæ.

A plant from southern and middle Europe, with 3-parted leaves and flowers in dense corymbs. (Adapted from *Boissier, Flora Orientalis*, vol. 1, p. 9.)

49870. VIGNA LUTEA (Swartz) A. Gray. Fabaceæ.
(*V. retusa* Walp.)

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received April 27, 1920.

"Seeds of the *silani*, a native perennial, trailing, and climbing vine which I have recently domesticated, principally for trial as a cover crop. It is easily grown from cuttings, and until it becomes too common it could be used as an ornamental climber in countries where it does not grow wild." (*Wester.*)

For previous introduction, see S. P. I. No. 31607.

49871. CISSUS HYPOGLAUCA A. Gray. Vitaceæ.
(*Vitis hypoglauca* F. Muell.)

From San Diego, Calif. Seeds presented by Miss Kate Sessions. Received May 7, 1920.

An Australian evergreen climber attaining an enormous length, forming when old a very stout stem, and bearing black berries which are the size of small cherries. The plant endures slight frost, though evergreen. It is best in cool climates to keep seedlings for two or three years under shelter, so that sufficient development of the woody stem may take place in the plant subsequently to resist some degree of frost. This species may perhaps be vastly changed by continued culture. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 563.)

The use of this vine on a pergola is shown in Plate II.

49872 and 49873. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

From Chico, Calif. Seeds from plants grown from a shipment of seeds from A. D. Voeikoff, Vladivostok, Siberia, May 17, 1920. Numbered for convenience in distribution June 15, 1920.

"This seed was planted June 15. On August 1 (45 days after planting the seed) fruits were ripe. The melons are not large, ranging from about 8 to 12 or 14 inches in diameter, nearly round, and of a purplish green color, very unusual and peculiar in appearance. The quality is fair to good. While this melon would not compete with the commercial types developed and grown here in a section highly favorable to melon production, the short season required for its development would seem to me to make it a valuable thing for many sections.

"In collecting the seed one vine was found with melons having yellow flesh; the remainder had red flesh." (*H. E. Allanson.*)

49872. Red-fleshed.

49873. Yellow-fleshed.

49874 and 49875.

From Elizabethville, Belgian Kongo. Bulbs collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 10, 1920. Quoted notes by Doctor Shantz.

49874. *GLORIOSA* sp. Melanthiaceæ.

"(No. 360. December 26, 1919.) This is the most prominent lily at this period. Some of the plants bear as many as seven or eight flowers which vary in color from all red to red and yellow. It is an exceptionally good lily for cut flowers, since it keeps perfectly for a long time."

49875. *OXALIS PUNCTATA GLABRATA* Sond. Oxalidaceæ.

Oxalis.

"(No. 361. December 26, 1919.) A small pink-flowered oxalis now in bloom; it is small but forms attractive tufts, the flowers extending a short distance above the leaves. It grows most commonly on ground cleared of trees and brush. The flowers appear at the beginning of the rainy season."

49876 to 49882.

From Kindu, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 10, 1920. Quoted notes by Doctor Shantz.

49876. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut

"(No. 501. January 26, 1920.) Peanuts grown by the natives; one of the staple crops."

49877. *CURCUMA LONGA* L. Zinziberaceæ.

"(No. 520. January 28, 1920.) Roots of the plant turmeric; grown by the natives."

49878. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ.

Oil palm

"(No. 495. January 26, 1920.) Seeds of the oil palm which is the chief palm of this region and the most important native plant."

49879 and 49880. *ORYZA SATIVA* L. Poaceæ.

Rice.

49879. "(No. 489. January 26, 1920.) Rice grown with corn on the east side of the river. Often 5 feet high and no straighthead."

49880. "(No. 502. January 26, 1920.) Rice grown by natives. This is the most important crop of this section; it is grown following corn (apparently sown at the same time) and on the higher, better-drained land presents a fine appearance. I have noticed no disease on either rice or corn."

49881. *VOANDZEIA SUBTERRANEA* (L.) Thouars. Fabaceæ.

"(No. 497. January 26, 1920.) The native groundnut of Africa; by no means as common as the peanut. The seeds are boiled with the husks on before they are ripe and are a fair substitute for the potato, but have a flavor slightly similar to that of the peanut."

For previous introduction, see S. P. I. No. 44817.

49882. *ZEA MAYS* L. Poaceæ.

Corn

"(No. 488. January 26, 1920.) Grown by the natives as an early crop with rice, on the east side of the river."

49883. DIOSPYROS LOTUS L. Diospyraceæ.

From Yokohama, Japan. Seeds received at Chico, Calif., from the Yokohama Nursery Co., April 12, 1920.

Introduced for use as rootstocks for the oriental persimmons in semiarid and alkaline sections of the United States.

For previous introduction, see S. P. I. No. 44688.

49884 and 49885.

From New York, N. Y. Seeds presented by J. W. Pincus. Received April 12, 1920.

49884. TRIFOLIUM PRATENSE L. Fabaceæ.

Red clover.

"This is the so-called Rozendaal clover, as grown in Holland. It has no hairs on the stems or leaves and is considered very much superior to any clover grown in this country. It could be raised successfully in localities where clover is grown under irrigation. In other places, owing to the abundance of native hairy clovers, the bees cross-fertilize the plants and it is impossible to get them pure." (*Pincus.*)

49885. VICIA SATIVA L. Fabaceæ.

[Sent in as lupine seed.]

49886. (Undetermined.)

From India. Seeds collected by Capt. F. Kingdon Ward, London, England. Received April 13, 1920.

"(Htawgaw Hill tracts, Burma, India. June, 1919.) A small tree 30 feet high, which grows wild in the forest on the northeast frontier of Burma, India, and bears fruit the size of a small plum. It is grown by the Lisus of the Htawgaw Hill tracts in clayey soil (disintegrated granite) in open clearings in villages at altitudes of 5,000 to 6,000 feet. The fruit is excellent, slightly acid, thirst quenching, first-rate for cooking or jam, and good as a table fruit. It ripens in June, just before the rains break. The climate is wet at all seasons, the winters cold (30° to 40° F.), and the summers warm (70° to 80° F.). The tree may be useful for grafting. Maru name *she-ham-shi*." (*Ward.*)

49887. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received April 13, 1920.

"This variety, *Uba del Natal*, is supposed to be immune to the red-stripe disease." (*B. T. Galloway.*)

49888. TRIFOLIUM PRATENSE L. Fabaceæ.

Red clover.

From Valparaiso, Chile. Seeds purchased through Carl F. Deichman, American consul. Received April 13, 1920.

Chilean red clover.

49889. PINUS GERARDIANA Wall. Pinaceæ.

Chilgoza pine.

From Rawalpindi, Punjab, India. Seeds presented by Dr. Ralph R. Stewart, Gordon College. Received April 14, 1920.

The Chilgoza pine is a moderate-sized tree found native in the inner dry and arid valleys of the northwestern Himalayas, generally at altitudes of 6,000 to 12,000 feet. It is quite hardy, enduring high winds and severe winters with heavy snows. The chief product of this tree is the edible seed, nearly an inch long; these are very nutritious and agreeable in flavor, forming the staple food of the natives. (Adapted from letter of W. H. Michael, consul general, Calcutta, and India Forest Department Bulletin No. 7, 1906.)

For previous introduction, see S. P. I. No. 40216.

49890. ACACIA BUXIFOLIA A. Cunn. Mimosaceæ.

From Tangier, Morocco. Seeds presented by M. Jules Goffart. Received April 14, 1920.

An Australian shrub, 4 feet in height, with angular branchlets and small, rather thick phyllodia. The short racemes, scarcely longer than the phyllodia, bear globular heads of flowers. (Adapted from *Bentham, Flora Australiensis*, vol. 2, p. 372.)

For previous introduction, see S. P. I. No. 47366.

49891 to 49894.

From Sydney, New South Wales, Australia. Seeds presented by the Forestry Commission, New South Wales, through George Valder, Director of Agriculture. Received April 15, 1920. Quoted notes by Mr. Valder.

49891. ATALAYA HEMIGLAUCA F. Muell. Sapindaceæ.

"Whitewood."

One of the inland fodder trees which favorably attracted the attention of stock owners in the early days of the pastoral occupation of New South Wales. The tree attains a height of 30 feet and has large compound whitish leaves with leaflets sometimes 8 inches long but usually smaller. The numerous terminal clusters of flowers are succeeded by winged fruits. From the trunk exudes a gum which sometimes accumulates in masses weighing more than half a pound. When grass and other herbage fails the leaves are taken from the tree and fed to cattle, for which it makes a good feed. (Adapted from *The Pastoral Finance Association Magazine*, vol. 5, No. 18, p. 33.)

49892. GEIJERA PARVIFLORA Lindl. Rutaceæ.

"Wilga. From Nyngan, New South Wales."

A tall shrub or tree, native to the interior of New South Wales, where it reaches a height of about 30 feet. It has slender, pendulous branches and narrow leaves 3 to 6 inches long, and a well-developed specimen has a highly ornamental appearance, having something of the aspect of a weeping willow. It has remarkable drought-enduring qualities, and the leaves are often fed to sheep, which are very fond of them. (Adapted from *The Pastoral Finance Association Magazine*, vol. 5, No. 18, p. 132.)

49893. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ.

Quandong.

(*Fusanus acuminatus* R. Br.)

The quandong, sometimes called "native peach," is a tree 20 to 30 feet high and is found in the hotter and drier parts of New South Wales. Its drought-enduring qualities are wonderful, for its growth seems to be affected neither by drought nor by the hot winds which periodically blow over the interior. The leaves are much relished by sheep and cattle, and the red fruits, up to 3 inches in circumference, are much valued for the edible succulent outer parts which are used for preserves, resembling the guava in flavor. The kernels are also edible and contain a large percentage of oil which when burned gives a good light. (Adapted from *The Pastoral Finance Association Magazine*, vol. 5, No. 18, p. 33.)

For previous introduction, see S. P. I. No. 43423.

49894. OWENIA ACIDULA F. Muell. Meliaceæ.

The *gruie*, or *sour plum*, is a highly ornamental, umbrageous tree, native to New South Wales, where it grows to be about 25 feet in height. It is regarded as a good fodder tree, as stock are very fond of its leaves. The ripe fruit is 3 to 4 inches in circumference, rich crimson, and the succulent outer portion is rather acidulous in flavor. The stone is exceedingly hard, and the tree is very hard to propagate by ordinary methods. (Adapted from *The Pastoral Finance Association Magazine*, vol. 5, No. 18, p. 33.)

49895 to 49897. ANANAS SATIVUS Schult. f. Bromeliaceæ.**Pineapple.**

From Singapore, Straits Settlements. Suckers presented by the acting director of the Botanic Gardens. Received April 15, 1920.

49895. *Ruby*.

49897. *Sarawak*.

49896. *Mauritius*.

49898. LINUM NARBONENSE L. Linaceæ.**Flax.**

From Verrieres, France. Seed presented by Jacques de Vilmorin. Received April 17, 1920.

A most desirable plant from southern Europe, with linear leaves and a graceful drooping habit; it is 2½ feet across and 18 inches high. The flowers, which appear throughout the summer, are arranged in a loose panicle, with long pedicels. Each flower is 1½ inches across, bright azure-blue, somewhat paler beneath, with white anthers and a white spot in the center of each flower. (Adapted from *The Garden*, vol. 52, p. 401.)

49899 to 49902. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ.

(*C. psoraloides* DC.)

Guar.

From Poona, Bombay Presidency, India. Seeds presented by A. A. Vasavada, Agricultural Branch. Received April 19, 1920.

"An erect East Indian leguminous annual, with long, straight stems bearing an enormous number of pods, each containing about seven pale, angular seeds. The plant grows 3 to 6 feet in height; in India it is cultivated both for green forage and for the seed, which is used mainly for feeding cattle and also as human food. Guar may be grown anywhere in the country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or as silage." (*C. V. Piper*.)

49899. *Gawar Makhnisa*.

49901. *Gawar Satia*.

49900. *Gawar Pardeshi*.

49902. *Local Gawar*.

For previous introduction, see S. P. I. No. 43503.

49903 and 49904. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ.

(*C. psoraloides* DC.)

Guar.

From Nagpur, Central Provinces, India. Seeds presented by K. P. Shrivastava, officiating economic botanist. Received April 19, 1920. Quoted notes by Mr. Shrivastava.

"I am sending seeds of the following two varieties, which are cultivated generally around Nagpur; both are generally grown during the rainy season."

49903. "*Telia Guar Phali*."

49904. "*Deshi Guar Phali*."

For previous introduction, see S. P. I. No. 49900.

49905 to 49910.

From Peking, Chihli, China. Presented by N. H. Cowdry, Peking Union Medical College. Received April 21, 1920. Quoted notes by Mr. Cowdry.

49905. *CLEMATIS* sp. Ranunculaceæ.

Clematis.

"Seed of an upright species."

49906. *DIOSPYROS LOTUS* L. Diospyraceæ.

"Fruits which are very commonly sold in Peking."

For previous introduction, see S. P. I. No. 44688.

49905 to 49910—Continued.

49907. *IRIS DICHOTOMA* Pall. Iridaceæ. Iris.
 "Seed of a handsome solitary plant, flowering in August."
 49908. *IRIS* sp. Iridaceæ. Iris.
 "Seed of a beautiful early spring flower."
 49909. *SCABIOSA* sp. Dipsacaceæ.
 "Admiral Wo. Seeds given to me by a Chinese friend, who says the flowers are large and blue. Growing only in one locality."
 49910. *ZIZIPHUS JIJUBA* Mill. Rhamnaceæ. Jujube.
 (*Z. sativa* Gaertn.)
 "Fruits of the Chinese date. A very common tree in gardens."
 For previous introduction, see S. P. I. No. 44687.

49911 to 49921.

From Techow, Shantung, China. Seeds presented by Miss Alice Reed through Prof. Henry Conrad, Grinnell College, Grinnell, Iowa. Received April 21, 1920. Quoted notes by Miss Reed.

49911. *ALLIUM CEPA* L. Liliaceæ. Onion.
 "Ts'ung onions. Plant in early summer or at any time."
 49912. *APIUM GRAVEOLENS* L. Apiaceæ. Celery.
 "Chinese celery. Plant in spring."
 49913. *BETA VULGARIS* L. Chenopodiaceæ. Beet.
 "Ken tang ts'ai. Plant in spring."
 49914 and 44915. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. Pai ts'ai.
 49914. "Ta pai ts'ai. Mammoth cabbage. Plant in summer; matures in late autumn for winter use."
 49915. "Pai ts'ai. Spring cabbage. Plant in spring."
 49916. *DAUCUS CAROTA* L. Apiaceæ. Carrot.
 "Hung do Pei. Plant in early summer."
 49917. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.
 "Small green bean."
 49918 to 49920. *SOJA MAX* (L.) Piper. Fabaceæ. Soy bean.
 (*Glycine hispida* Maxim.)
 49918. "Black bean." 49920. "Large green bean."
 49919. "Yellow bean."
 49921. *SPINACIA OLERACEA* L. Chenopodiaceæ. Spinach.
 "Po ts'ai."

49922 to 49954.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received April 24, 1920.

49922. *ANEMONE SYLVESTRIS* L. Ranunculaceæ.

A European plant commonly called snowdrop anemone because of the drooping habit of the flowers before fully expanding, giving it a certain resemblance to the snowdrop (*Galanthus nivalis*). The white flowers, 1½ inches in diameter, are borne on long peduncles which arise singly from an involucre of leaves. These leaves are ternate or quinate with deeply toothed leaflets and are hairy on the undersurface. (Adapted from *The Garden*, vol. 65, p. 73.)

49922 to 49954—Continued.

49923. *ANEMONE VITIFOLIA* Buch.-Ham. Ranunculaceæ.

An ornamental plant, 1½ to 3 feet high, with white flowers. Common in Nepal.

For previous introduction, see S. P. I. No. 47693.

49924. *BERBERIS ANGULOSA* Wall. Berberidaceæ.

Barberry.

A deciduous shrub from India, 4 feet or more high, with dark glossy green leaves, orange-yellow flowers, two-thirds of an inch across, and scarlet fruits.

49925. *BERBERIS BEANIANA* C. Schneid. Berberidaceæ.

Barberry.

A shrub with vigorous shoots, yellow spines, small yellow flowers, and purple plum-shaped fruits. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 439.)

49926. *BERBERIS CONCINNA* Hook. f. Berberidaceæ.

Barberry.

A low bush of compact habit with lustrous green leaves white beneath, deep-yellow flowers, and red berries. Native to the Sikkim Himalayas.

For previous introduction, see S. P. I. No. 40145.

49927. *BERBERIS DUBIA* C. Schneid. Berberidaceæ.

Barberry.

A Chinese shrub with ovate leaves paler beneath and with flowers in short racemes. (Adapted from *Bulletin de l'Herbier Boissier*, second series, vol. 5, p. 663.)

49928. *BERBERIS LYCIUM* Royle. Berberidaceæ.

Barberry.

A Himalayan plant that yields the Indian "rasout," an extract from the root used to allay inflammation of the eyes; also employed by the natives in the treatment of fevers of all kinds. The beautiful purple fruit is covered with a delicate bloom, is edible, and is dried and exported. (Adapted from *Curtis's Botanical Magazine*, pl. 7075.)

For previous introduction, see S. P. I. No. 30769.

49929. *BERBERIS AGGREGATA PRATTII* C. Schneid. Berberidaceæ.

Barberry.

A western Chinese shrub, 6 to 10 feet high, with yellow flowers in narrow panicles and ovoid salmon-red fruits.

For previous introduction, see S. P. I. No. 44527.

49930. *BERBERIS SOULIEANA* C. Schneid. Berberidaceæ.

Barberry.

A plant with very firm leaves having rather spreading spinose teeth and distinctly glaucous globose fruits. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 437.)

For previous introduction, see S. P. I. No. 40682.

49931. *BERBERIS THIBETICA* C. Schneid. Berberidaceæ.

Barberry.

A red-fruited bush, 1½ to 2 meters high, found in thickets at an altitude of 3,200 to 3,400 meters in western Szechwan.

49932. *BERBERIS UMBELLATA* Wall. Berberidaceæ.

Barberry.

An erect straggling Himalayan shrub, 8 to 10 feet high, with oblong berries.

For previous introduction, see S. P. I. No. 33023.

49933. *BERBERIS HOOKERI* Lem. Berberidaceæ.

Barberry.

(*B. wallichiana* Hook., not DC.)

A yellow-flowered shrub, native to forests at altitudes of 8,000 to 10,000 feet in the temperate portions of the Himalayas. It has evergreen lanceolate leaves and blackish purple, shining berries. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 110.)

For previous introduction, see S. P. I. No. 44381.

49922 to 49954—Continued.

49934. *CLEMATIS AETHUSIFOLIA* Turcz. Ranunculaceæ.

A free-growing deciduous climber from China, 5 to 6 feet high, with densely tangled slender stems and finely divided foliage. The attractive pale-yellow blossoms are produced profusely.

49935. *CLEMATIS FARGESII* Franch. Ranunculaceæ.

A 20-foot climber with white flowers which are 2 inches across in 3-flowered long-stalked axillary cymes.

49936. *CLEMATIS FUSCA* Turcz. Ranunculaceæ.

A semiherbaceous climber from northeastern Asia, with woolly reddish brown pitcher-shaped flowers. The seed vessels are covered with yellow-brown silky hairs.

49937. *CLEMATIS REHDERIANA* Craib. Ranunculaceæ.

A Chinese woody climber with pinnate chartaceous leaves which are pale beneath and compact axillary panicles of flowers. The sepals are 1.7 centimeters long, reflexed at the tip, pilose on the outer surface, smooth on the inner. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1914, p. 150.)

49938. *CLEMATIS VEITCHIANA* Craib. Ranunculaceæ.

A Chinese woody climber with bipinnate chartaceous leaves and long lax axillary inflorescences of gracefully drooping flowers with ciliated sepals. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1914, p. 151.)

49939. *DEUTZIA CORYMBOSA* R. Br. Hydrangeaceæ.

This pretty species has a special value by reason of its late, continuous flowering, being at its best in July and August, when the bush is covered with the corymbose clusters of pure-white flowers not far removed in form or purity of color from those of *Bouvardia jasminoides*. (Adapted from *Gardening Illustrated*, vol. 39, p. 501.)

49940. *DEUTZIA LONGIFOLIA* Franch. Hydrangeaceæ.

A deciduous shrub, 4 to 6 feet high, one of the handsomest garden plants of the genus. The young shoots are covered with a pale scurf and the leaves are whitish below. The rosy flowers, about an inch across, are borne in rounded cymose clusters 2 to 3 inches across. (Adapted from *Gardeners' Chronicle*, third series, vol. 51, p. 409.)

For previous introduction, see S. P. I. No. 42691.

49941. *DEUTZIA LONGIFOLIA VEITCHII* (Veitch) Rehder. Hydrangeaceæ.

This vigorous plant from Yunnan, China, has large, brilliantly colored, deep rose-lilac flowers, disposed in numerous little clusters the entire length of the branches.

For previous introduction, see S. P. I. No. 42691.

49942. *DEUTZIA MOLLIS* Duthie. Hydrangeaceæ.

A very distinct and beautiful species from central China. The white or pink-tinged flowers are in flat corymbose panicles. (Adapted from *Gardeners' Chronicle*, third series, vol. 40, p. 238.)

49943. *DEUTZIA SIEBOLDIANA* Maxim. Hydrangeaceæ.

The lowest growing of all the Deutzias, of a very compact habit. It has small white flower panicles which are not very conspicuous; but it is a very graceful shrub. (Adapted from *Gardening Illustrated*, vol. 39, p. 335.)

49922 to 49954—Continued.

49944. *DEUTZIA VILMORINAE* Lemoine and Bois. Hydrangeaceæ.

A plant of vigorous growth with pure-white flowers, suggestive of some of the smaller growing kinds of *Philadelphus*, a resemblance which is increased by the lateness of its flowering period. It is a native of China. M. Lemoine, of Nancy, has raised hybrids between this species and different forms of *Deutzia crenata* or *D. scabra*, which flower at about the same time and thus usually escape injury from late spring frosts which often damage the flowers of the earlier kinds. As the parents of these are among the most desirable of our early-flowering shrubs and valuable from the fact that many spring-flowering subjects are over before their blossoms develop, these newer hybrids should prove good acquisitions. (Adapted from *Gardening Illustrated*, vol. 39, p. 362.)

For previous introduction, see S. P. I. No. 35184.

49945. *DIERVILLA SESSILIFOLIA* Buckl. Caprifoliaceæ.

A beautiful free-flowering North American plant with light pea-green leaves 8 inches long and 3 to 4 inches broad and pretty sweet-scented light-yellow flowers. (Adapted from *Gardeners' Chronicle*, third series, vol. 42, p. 427.)

49946. *DEUTZIA WILSONI* Duthie. Hydrangeaceæ.

A very handsome Chinese shrub with reddish brown bark, soon peeling, and scabrous oblanceolate leaves 3 to 4½ inches long. The white flowers, nearly 1 inch across, are in open corymbs; the petal margins are wavy and hooded. (Adapted from *Curtis's Botanical Magazine*, pl. 8083.)

49947. *LONICERA ALPIGENA* L. Caprifoliaceæ. Honeysuckle.

A central European deciduous shrub, 4 to 8 feet high, with paired red-tinged yellow flowers on long stalks and red cherrylike fruits.

49948. *PHILADELPHUS ACUMINATUS* Lange. Hydrangeaceæ.

A Chinese shrub 10 feet high, with hard-tipped serrate leaves and very fragrant white flowers.

49949. *PHILADELPHUS LEWISII* Pursh. Hydrangeaceæ.

One of the most floriferous of all the taller species, with graceful pendulous branches. The white flowers are more than an inch across. Native to western North America.

49950. *PHILADELPHUS PEKINENSIS* Rupr. Hydrangeaceæ.

A free-flowering Chinese shrub with slightly fragrant yellowish flowers about 1 inch across, produced in racemes of five to nine.

49951. *ROSA GLUTINOSA* Sibth. and Smith. Rosaceæ. Rose.

A dwarf sweetbrier, ranging from Italy eastward to Persia, with short compact branches and white flowers tinged with pink. The small globose fruits are bright red. (Adapted from *Willmott, The Genus Rosa*, pl. 150.)

49952. *ROSA MOPLIS* J. E. Smith. Rosaceæ. Rose

A compact rose, often not more than 3 feet high, with short erect stems and broadly oval leaflets clothed with soft-gray pubescence on both surfaces. The flowers are usually pink, occasionally white, and the early ripening red pulpy fruits with erect persistent sepals are often pendulous and very ornamental. (Adapted from *Willmott, The Genus Rosa*, pl. 138.)

49953. *ROSA SERAFINII* Viv. Rosaceæ. Rose.

A dwarf, densely branching leafy bush with dark-green leaves and solitary bright rose-colored flowers. The pea-shaped fruits are red changing to black. Native to Corsica, Sardinia, Sicily, and the Apuan and Maritime Alps. (Adapted from *Curtis's Botanical Magazine*, pl. 7761.)

For previous introduction, see S. P. I. No. 32961.

49922 to 49954—Continued.

49954. *ROSA WEBBIANA* Wall. Rosaceæ.

Rose.

A rose common in the central Himalayas, at altitudes of 6,000 to 13,000 feet. The great beauty of this rose lies in the young shoots which at first are absolutely blue and covered with large pure-white thorns. It has the smallest leaves of any cultivated rose. The flowers are pink, moderately large, and the globose coriaceous fruit is nodding. (Adapted from Willmott, *The Genus Rosa*, pl. 76.)

For previous introduction, see S. P. I. No. 40191.

49955 to 49976.

From Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 5, 1920. Quoted notes by Doctor Shantz.

49955. *ADENANTHERA PAVONINA* L. Mimosaceæ.

Coral-bean tree.

"(No. 384. Elizabethville, Belgian Kongo. December 29, 1919.) A leguminous tree with bright-red beans, used as a street tree in Elizabethville."

For previous introduction, see S. P. I. No. 42355.

49956. *ALBIZZIA LEBBECK* (L.) Benth. Mimosaceæ.

Lebbeck tree.

"(No. 379. Elizabethville, Belgian Kongo. December 28, 1919.) An attractive tree for ornamental purposes or as a street tree."

For previous introduction, see S. P. I. No. 42809.

49957. *ASPARAGUS* sp. Convallariaceæ.

"(No. 374. Victoria Falls, Southern Rhodesia. November 17, 1919.) A large spiny type."

49958. *BERLINIA* sp. Cæsalpiniaceæ.

"(No. 375. Victoria Falls, Southern Rhodesia. November 17, 1919.) Seeds of a leguminous tree."

49959. *BIDENS PILOSA* L. Asteraceæ.

"(No. 378. Elizabethville, Belgian Kongo. December 28, 1919.) A very common plant in this part of the Kongo; it makes a splendid forage plant, but has weedy tendencies. [It is the same as No. 188, S. P. I. No. 49292.]"

49960. *BRACHYSTEGIA* sp. Cæsalpiniaceæ.

"(No. 377. Victoria Falls, Southern Rhodesia. November 17, 1919.) A leguminous tree."

49961. *CASSIA DIDYMOBOTRYA* Fres. Cæsalpiniaceæ.

"(No. 380. Elizabethville, Belgian Kongo. December 28, 1919.) A sennalike ornamental shrub; good for parking."

For previous introduction, see S. P. I. No. 43649.

49962. *COFFEA EXCELSA* Cheval. Rubiaceæ.

Coffee.

"(No. 369. Elizabethville, Belgian Kongo. December 27, 1919.) Said to be a native coffee; obtained from M. De Neuter, Elizabethville."

49963. *COFFEA LAURENTII* Wildem. Rubiaceæ.

Coffee.

(*C. robusta* Hort.)

"(No. 368. Elizabethville, Belgian Kongo. December 27, 1919.) One of the best types for the Kongo; said to be a native coffee. Secured from M. De Neuter at Elizabethville."

For previous introduction, see S. P. I. No. 32359.

49955 to 49976—Continued.

49964. *COMBRETUM* sp. Combretaceæ.

"(No. 382a. Elizabethville, Belgian Kongo. December 29, 1919.) One of the prominent trees of this section; often large."

49965. *CYPHOMANDRA BETACEA* (Cav.) Sendt. Solanaceæ. Tree-tomato.

"(No. 382. Elizabethville, Belgian Kongo. December 29, 1919.) This plant does well here in cultivation and produces quantities of egg-shaped fruits. It grows rapidly and lives about four years."

For previous introduction, see S. P. I. No. 44913.

49966. *ELEUSINE CORACANA* (L.) Gaertn. Poaceæ. Ragi millet.

"(No. 359. Sakania, Belgian Kongo. December 17, 1919.) Said to be especially prized for making Kafir beer; grown only by the natives."

For previous introduction, see S. P. I. No. 46295.

49967 and 49968. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

49967. "(No. 358 Sakania, Belgian Kongo. December 17, 1919.)

The type grown by natives of this section. I have seen fields broadcast, but as a rule it is grown in hills like corn."

49968. "(No. 365a. Elizabethville, Belgian Kongo. December 27, 1919.) A white kafir grown by the natives and one of the chief food staples. The seed looks quite uniform and much like our white-hulled kafir. Grown at Munama Experiment Station."

49969 and 49970. *ORYZA SATIVA* L. Poaceæ. Rice.

49969. "(No. 366. Elizabethville, Belgian Kongo. December 27, 1919.) A late variety grown without irrigation by the natives at Stanleyville, known to the natives as *kinyeki*. The grain breaks up easier and it is three weeks later than No. 367 [S. P. I. No. 49970]. Obtained from M. De Neuter, Chef du Service de l'Agriculture, Elizabethville."

49970. "(No. 367. Elizabethville, Belgian Kongo. December 27, 1919.) An early rice known as *mutselu* by the natives who grew it at Stanleyville. It is grown with rain only or as dry-land rice; no irrigation. It is three or four weeks earlier than No. 366 [S. P. I. No. 49969]. Obtained from M. De Neuter, Elizabethville."

49971. *PLECTRONIA* sp. Rubiaceæ.

"(No. 385. Elizabethville, Belgian Kongo. December 29, 1919. Herb. No. 500.) A low shrubby plant with white or greenish flowers and black berries."

49972. *SOLANUM* sp. Solanaceæ.

"(No. 371. Elizabethville, Belgian Kongo. December 27, 1919.) A decorative *Solanum*, with deep-lavender flowers $1\frac{1}{2}$ inches wide and deep-orange fruits $1\frac{1}{2}$ inches in diameter."

49973. *TRISTACHYA BISERIATA* Stapf. Poaceæ. Grass.

"(No. 381. Elizabethville, Belgian Kongo. December 29, 1919. Herb. No. 502.) One of the taller, coarser grasses. It has three awns like an *Aristida*, but two of these are very small. All grasses of this section grow on a continuous grass floor under the tall spreading forest trees. They should be tried in the Southern States. Drought obtains here from July to November, inclusive, with rain the rest of the year."

For previous introduction, see S. P. I. No. 23923.

49955 to 49976—Continued.

49974. *ZEA MAYS* L. Poaceæ.

Corn.

“(No. 357. Sakania, Belgian Kongo. December 17, 1919.) The corn grown by the natives of this section; said to be small and early. It is planted mostly in small elevated beds about the native villages. Meal from this corn constitutes the chief food of the natives. This is a cool part of the Kongo, and the corn is probably an earlier type than will be found farther down.”

49975. (Undetermined.)

“(No. 376. Victoria Falls, Southern Rhodesia. November 17, 1919.) Seeds of a medium-sized forest tree from the open forests of Zambesi region.”

49976. (Undetermined.)

“(No. 383. Elizabethville, Belgian Kongo. December 29, 1919.) A tree which bears a large quantity of small, orange fruits with tough rinds and large pulp-covered seeds. The fruit is said to be eaten by the natives, but it does not taste very good and there is very little edible material on each fruit.”

49977 to 50054.

From Belgian Kongo. Seeds collected by Dr. H. L. Shantz. Agricultural Explorer of the United States Department of Agriculture. Received April 6, 1920. Quoted notes by Doctor Shantz.

49977. *ABELMOSCHUS ESCULENTUS* (L.) Moench. Malvaceæ.

Okra.

(*Hibiscus esculentus* L.)

“(No. 439. Bukama. January 16, 1920.) A tall okra plant with unusually short fruits which are used extensively. It is but rarely seen here and differs only slightly from the plant in our own gardens.”

49978 and 49979. *ANNONA MURICATA* L. Annonaceæ.

Soursop.

49978. “(No. 511. Kindu. January 27, 1920.) An introduced fruit, 6 inches long, with white flesh of very good flavor.”

For previous introduction, see S. P. I. No. 47874.

49979. “(No. 527. Kongolo. February 1, 1920.) A large and unusually good soursop. It is grown both here and at Kindu.”

49980. *ANNONA RETICULATA* L. Annonaceæ.

Custard-apple.

“(No. 528. Kongolo. February 2, 1920.) A very good custard-apple; quite abundant here and said to produce fruit in three years from seed.”

For previous introduction, see S. P. I. No. 45955.

49981. *ARACHIS HYPOGAEA* L. Fabaceæ.

Peanut.

“(No. 467. Moyumba. January 20, 1920.) A variety of peanut grown by the natives; an important food crop.”

49982. *ASPARAGUS* sp. Convallariaceæ.

Asparagus.

“(No. 402. Kalule Sud. January 8, 1920.) An upright, rather spiny asparagus; a bush and not a vine. Valuable as an ornamental.”

49983. *BOTHRIOCLINE* sp. Asteraceæ.

“(No. 401. Kalule Sud. January 8, 1920. Herb. No. 546.) A rather large-flowered plant which resembles *Vernonia*.”

49984. *BRACHIARIA BRIZANTHA* (Hochst.) Stapf. Poaceæ.

Grass.

(*Panicum brizanthum* Hochst.)

“(No. 404. Kalule Sud. January 8, 1920. Herb. No. 535.) A tall hairy leaved *Chaetochloa*-like grass forming large clumps, with a luxuriant growth.”

For previous introduction, see S. P. I. No. 43240.

49977 to 50054—Continued.

49985. *CAESALPINIA PULCHERRIMA* (L.) Swartz. *Cæsalpiniaceæ*.

"Seeds of this shrub or small tree were found with corn from Nionga, collected January 18, 1920. The plant is a leguminous ornamental widely distributed throughout the Tropics and has large open clusters of flowers whose petals are scarlet edged with gold."

49986. *CAJAN INDICUM* Spreng. *Fabaceæ*.

Pigeon-pea.

"(No. 531. Kongolo. February 2, 1920.) A tall woody legume called a bean by the whites and said to be very good while still green."

49987. *CANAVALI ENSIFORME* (L.) DC. *Fabaceæ*.

Jack bean.

"(No. 521. Kindu. January 28, 1920.) A large white bean grown by the natives and used in soups."

49988. *CAPSICUM ANNUM* L. *Solanaceæ*.

Red pepper.

"(No. 444. Nionga. January 28, 1920.) A variety of paprika with very narrow leaves and spreading habit; it is grown by the natives."

49989. *CASSIA ALATA* L. *Cæsalpiniaceæ*.

"(No. 526. Kongolo. February 1, 1920. Herb. No. 633.) A Cassia which forms an attractive shrub."

49990. *CASSIA OCCIDENTALIS* L. *Cæsalpiniaceæ*.

"(No. 449. Kadia. January 18, 1920. Herb. No. 593.) A yellow-flowered legume abundant on moist soil. It may be a good green manure for southern wet lands. A native told me the leaves were used as greens."

For previous introduction, see S. P. I. No. 42830.

49991. *CASSIA* sp. *Cæsalpiniaceæ*.

"(No. 400. Elizabethville. January 6, 1920.) A small bush used as an ornamental at Elizabethville."

49992. *CHAETOCLOA* sp. *Poaceæ*.

Grass:

"(No. 440. Kebelwe. January 17, 1920. Herb. No. 588.) A tall grass from moist soil near the river, where it grows up singly, not forming clumps."

49993. *CLEOME* sp. *Capparidaceæ*.

"(No. 474. Ankoro. January 21, 1920.) An attractive ornamental with pink flowers."

49994. *COMBRETUM* sp. *Combretaceæ*.

"(No. 514. Kindu. January 28, 1920. Herb. No. 630.) A shrub or vine with yellow flowers and the leaves of the flowering branches bright red."

49995. *CRACCA* sp. *Fabaceæ*.

"(No. 464. Kabwe. January 19, 1920. Herb. No. 598.) Seeds of a large velvet bean."

49996. *CRACCA* sp. *Fabaceæ*.

"(No. 469. Kayombe. January 20, 1920. Herb. No. 601.) Seeds of a pink legume; may be valuable as forage or for green manure."

49997. *CUCURBITA PEPO* L. *Cucurbitaceæ*.

Pumpkin.

"(No. 455. Kadia. January 18, 1920.) Seeds of a pumpkin grown by the natives."

49998. *DRACAENA* sp. *Liliaceæ*.

"(No. 510. Kindu. January 27, 1920.) An attractive plant somewhat like *Pandanus* but with equally arranged leaves and red palmlike fruits."

49977 to 50054—Continued.

49999. *ECHINOCHLOA PYRAMIDALIS* (Lam.) Hitchc. and Chase. Poaceæ. Grass.
(*Panicum pyramidalis* Lam.)

"(No. 473. Kapako, near Ankoro. January 21, 1920. Herb. No. 594.) A tall grass common along the river."

50000. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. Oil palm.

"(No. 442. Nionga. January 18, 1920.) The most important palm of the Kongo. The pulp is eaten raw or roasted; also the oil is extracted from the pulp and from the kernel. It is abundant along the Lualaba south as far as the vicinity of Bukama. It is planted everywhere by the natives, and the tree always belongs to the man who planted it or to his descendants. It forms a fringe along the banks of the Lualaba. At Kindu and Kongolo there are trees, but it seems far less important here than farther south."

For previous introduction, see S. P. I. No. 48010.

50001. *ELEusine CORACANA* (L.) Gaertn. Poaceæ. Ragi millet.

"(No. 446. Kadia. January 18, 1920.) Called 'millet'; a short, low-growing plant known in Luban as *luku*. It is the most important seed for the manufacture of beer; also used as a food."

For previous introduction, see S. P. I. No. 46295.

50002. *ERIOSEMA* sp. Fabaceæ.

"(No. 466. Moyumba. January 20, 1920. Herb. No. 599.) A leguminous shrub abundant on the river lands."

50003. *ETHULIA CONYZOIDES* L. Asteraceæ.

"(No. 450. Kadia. January 18, 1920. Herb. No. 592.) A lavender-flowered composite; this may be valuable as an ornamental."

50004. *Gossypium* sp. Malvaceæ. Cotton.

"(No. 529. Kongolo. February 2, 1920.) A cotton with a very long pod, secured from the Catholic Mission."

50005. *Gossypium* sp. Malvaceæ. Cotton.

"(No. 535. Kongolo. February 3, 1920. Herb. No. 643.) Seeds of a black-seeded, long-podded native cotton, probably the same as No. 533 [S. P. I. No. 50006]. The plants were growing wild around Kongolo and are believed by the whites to be native cotton. This particular one has fairly good lint."

50006. *Gossypium* sp. Malvaceæ. Cotton.

"(No. 533. Kongolo. February 2, 1920.) Cotton picked up at a trader's store; apparently secured from the natives."

50007. *HIBISCUS* sp. Malvaceæ.

"(No. 452. Kadia. January 18, 1920. Herb. No. 591.) An ornamental plant about 4 feet high, with lemon-yellow flowers marked with rich purple."

- 50008 and 50009. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ. Tabucki grass.

50008. "(No. 441. Nionga, west of Lake Kisali. January 17, 1920. Herb. No. 589.) Mixed seeds from plants growing near the village; abundant along the Lualaba River."

50009. "(No. 454. Kadia. January 18, 1920.)"

- 50010 and 50011. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ. Kamerun grass.

50010. "(No. 460. Mulongo. January 19, 1920. Herb. No. 496.) Seeds of a tall plant on the uplands."

50011. "(No. 461. January 19, 1920.) Similar to No. 460 [S. P. I. No. 50010]."

49977 to 50054—Continued.

50012 to 50014. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.
Tabucki grass.

50012. "(No. 483. Malele. January 23, 1920. Herb. No. 610.) Seeds of a plant growing at the side of the track."

50013. "(No. 506. Kindu. January 27, 1920. Herb. No. 623.) Seeds from a plant on low land."

50014. "(No. 507. Kindu. January 27, 1920.) Seeds from a plant on the uplands."

50015. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"(No. 516. Kindu. January 28, 1920.) Seeds of a grass very abundant here but never used by the natives."

50016. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ.
Tabucki grass.

"(No. 524. Kongola. January 31, 1920.) Seeds."

50017 to 50019. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

50017. "(No. 387. Elizabethville. January 5, 1920.) White kafir."

50018. "(No. 445. Kadia. January 18, 1920.) Red kafir, known in the Luban language as *muki*; important for food."

50019. "(No. 530. Kongolo. February 2, 1920.) A white kafir grown east and south of here; called *mutama* by the natives."

50020. *INULA* sp. Asteraceæ.

"(No. 404. Kalule Sud. January 8, 1920.) An ornamental composite."

50021. *JATROPHA CURCAS* L. Euphorbiaceæ.

"(No. 459. Kulu. January 19, 1920.) A hedge plant with cottonlike leaves and upright habit. The fruits are yellow-green and three-fourths of an inch in diameter. The seed yields an oil."

For previous introduction, see S. P. I. No. 47916.

50022. *KIGELIA* sp. Bignoniaceæ.

"(No. 539. Kongolo. February 3, 1920.) The large sausage tree; abundant from the Zambezi to Kongolo."

50023. *LUFFA CYLINDRICA* (L.) Roem. Cucurbitaceæ.
(*L. aegyptiaca* Mill.)

"(No. 538. Kongolo. February 3, 1920. Herb. No. 642.) A variety of Luffa which grows wild here; not eaten by the natives."

For previous introduction, see S. P. I. No. 40533.

50024. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. Tomato.

"(No. 463. Kabwe. January 19, 1920.) A small red tomato planted everywhere by the natives."

50025. *MELOTHRIA* sp. Cucurbitaceæ.

"(No. 409. Kalule Sud. January 19, 1920.) A small cucurbit with pointed, very pretty fruits; said to be eaten by the natives. The plant is a low climber or prostrate."

50026. *MELOTHRIA* sp. Cucurbitaceæ.

"(No. 457. Kadia. January 18, 1920.) A small red fruit, one-fourth of an inch in diameter; ornamental."

49977 to 50054—Continued.

50027. *PHYSALIS PERUVIANA* L. Solanaceæ. Poha

"(No. 410. Kalule Sud. January 19, 1920.) The Cape gooseberry, which grows along the track."

For previous introduction, see S. P. I. No. 46681.

50028. *PROTEA* sp. Proteaceæ.

"(No. 406. Kalule Sud. January 8, 1920. Herb. No. 545.) A red shrub about a foot high."

50029. *RICINODENDRON RAUTANENII* Schinz. Euphorbiaceæ. Manketti tree

"(No. 534. Kongolo. February 3, 1920. Herb. No. 417.) A timber and nut tree."

For an illustration of the manketti tree, see Plate III.

50030 and 50031. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean

50030. "(No. 451. Kadia. January 18, 1920.) Castor-oil beans."

50031. "(No. 532. Kongolo. February 2, 1920.)"

50032. *SAPINDUS SENEGALENSIS* Poir. Sapindaceæ. Soapberry

"(No. 525. Kongolo. January 31, 1920.) Seeds of a tree whose fruits are used as a substitute for soap."

50033. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame

"(No. 512. Kindu. January 28, 1920.) Seeds of sesame grown by natives for its oil."

50034. *SESAMUM ANGOLENSE* Welw. Pedaliaceæ. Sesame

"(No. 475. Below Kambi. January 21, 1920. Herb. No. 600.) Seeds of sesame, abundant all along the river; this is a wild form with a larger flower than the cultivated kind."

50035. *SOLANUM MELONGENA* L. Solanaceæ. Eggplant

"(No. 399. Elizabethville. January 6, 1920.) A red eggplant, very small but sold when still green; secured from the native market."

50036. *SOLANUM* sp. Solanaceæ.

"(No. 403. Kalule Sud. January 8, 1920. Herb. No. 533.) A small orange fruited *Solanum* with berries half an inch in diameter. The plant is about 3 feet high and makes a fairly good ornamental."

50037. *SPOROBOLUS PYRAMIDALIS* Beauv. Poaceæ. Grass

"(No. 519. Kindu. January 28, 1920. Herb. No. 631.) A species of *Sporobolus* grown on poor land."

50038. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass

"(No. 536. Kongolo. February 3, 1920.) This seems a taller and much more branched grass here than farther south."

For previous introduction, see S. P. I. No. 41921.

Plate IV shows this grass as it grows near Lake Tanganyika.

50039. *TRICHOPTERYX DIANDRA* Schum. Poaceæ. Grass

"(No. 470. Kayombe. January 20, 1920. Herb. No. 603.) A grass resembling *Stipa*, about 8 feet high, with a loose head."

50040. *TRIUMFETTA RHOMBOIDEA* Jacq. Tiliaceæ.

"(No. 513. Kindu. January 28, 1920. Herb. No. 629.) A tall woody plant, 6 to 12 feet high, extensively used for fiber. It is one of the best; the fiber is very strong and easily obtained."



THE MANKETTI TREE OF THE BELGIAN KONGO. (*RICINODENDRON RAUTANENII* SCHINZ; S. P. I. No. 50029.)

The fruits produced by this tree, an ally of the castor-bean, somewhat resemble almonds in character. They yield over 57 per cent of a rich yellow oil and are much prized as food by the natives. Unfortunately, they are somewhat difficult to crack because of the hard shell. The tree is ornamental, and the wood, which is very light, is used in the construction of boxes and for other purposes, where light weight is a prime consideration. In this respect the manketti may well be compared to the balsa tree of Central America, whose commercial exploitation is now receiving much attention. (Photographed by Dr. H. L. Shantz, Victoria Falls, Southern Rhodesia, November 13, 1919; P36745FS.)



NATAL GRASS AS IT GROWS ON THE SHORES OF LAKE TANGANYIKA, AFRICA.
(*TRICHOLOAENA ROSEA* NEES; S. P. I. No. 50038.)

Dr. Shantz has brought in several distinct strains of Natal grass, a species which has attracted much attention for several years because of its value for hay and as a mulch crop on the sandy soils of Florida and other Gulf Coast States. Not a weed itself, because it can be killed by a single plowing, it is found useful in favorable soil to choke out weeds and grasses by its vigorous growth; at the same time it yields an average of $2\frac{1}{2}$ to 3 tons of excellent hay to the acre. Double that quantity has been secured under very favorable conditions. (Photographed by Dr. H. L. Shantz, Nyanza, Urundi, February 29, 1920; P37628FS.)

49977 to 50054—Continued.

50041 and 50042. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

50041. "(No. 462. Mulongo. January 19, 1920.) Kafir beans; grown on river lands by natives."

50042. "(No. 391. Elizabethville. January 5, 1920.) Beans grown by the natives around through the villages."

50043. *VIGNA* sp. Fabaceæ.

"(No. 456. Kadia. January 18, 1920.) Seeds of a small-podded *Vigna*."

50044 to 50050. *ZEА MAYS* L. Poaceæ. Corn.

50044. "(No. 390. Elizabethville. January 5, 1920.) Corn secured from the natives; grown about their villages."

50045. "(No. 443. Uionga. January 18, 1920.) Corn grown by the natives near the water level on the banks of the Lualaba."

50046. "(No. 447. Kadia. January 18, 1920.) A yellow corn grown on low land near the river."

50047. "(No. 448. Kadia. January 18, 1920.) A white and purple corn. This and No. 447 [S. P. I. No. 50046] are the staple crops of the country. They are planted in November at the beginning of the rainy season and repeated plantings made up to about January. The ripe corn is soaked, half pounded in mortars, dried, winnowed (of the pericarp), pounded to a fine meal, and made into a stiff mush. This is the staple food of all natives."

50048. "(No. 505. January 26, 1920.) A white flint corn; the type most commonly grown here; from a rice-corn field."

50049. "(No. 517. Kindu. January 28, 1920.) A white dent corn, not common here."

50050. "(No. 518. Kindu. January 28, 1920.) A white flint corn, not common here."

50051. (Undetermined.)

"(No. 509. Kindu. January 27, 1920.) A large forest tree with dry fruits a little smaller than an orange."

50052. *PSEUDARTHRIA HOOKERI* Wight and Arn. Fabaceæ.

"(No. 523. Malele to Kindu. January 31, 1920. Herb. No. 632.) A tall herbaceous leguminous plant which looks like a pink spirea at a distance. It is abundant in the tree savanna country and may be useful as a green manure or even as an ornamental."

50053. (Undetermined.)

"(No. 537. Mongolo. February 3, 1920. Herb. No. 644.) A river-bank tree with oval red fruits about 1½ inches long, with edible nuts."

50054. *SOLANUM MELONGENA* L. Solanaceæ.

Eggplant.

"(No. 540. Kongolo. February 5, 1920.) A yellow-fruited eggplant, said to be native; of very good quality."

50055 and 50056.

From Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer of the Bureau of Plant Industry. Received April 5, 1920. Quoted notes by Doctor Shantz.

50055. *DIOSCOREA* sp. Dioscoreaceæ.

Yam.

"(No. 515. Kindu. January 28, 1920.) Aerial tubers of one of the most common vines. It may be valuable as an ornamental, as well as a food plant."

50055 and 50056—Continued.**50056.** *GLADIOLUS* sp. Iridaceæ.**Gladiolus.**

“(No. 458. Kulu. January 19, 1920. Herb. No. 595.) Bulbs of a small white gladiolus with occasionally a touch of pink and two purple blotches surrounded by yellow on the lower petals. The same form was found at Kabwe.”

50057 and 50058. PISTACIA VERA L. Anacardiaceæ. Pistache.

From Athens, Greece. Cuttings presented by B. Krimpas, director, Royal Society of Agriculture. Received April 22 and 24, 1920.

A variety bearing unusually large pistache nuts which were included in an exhibit at the Panama-Pacific International Exposition in 1915.

50057. Cuttings from a pistillate tree.**50058.** Cuttings from a staminate tree.**50059 to 50068.**

From Elizabethville, Belgian Kongo. Collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 8, 1920. Quoted notes by Doctor Shantz.

50059. *DATURA STRAMONIUM* L. Solanaceæ.

“(No. 394. January 5, 1920.) Seeds of a white-flowered form.”

50060. *ELEUSINE CORACANA* (L.) Gaertn. Poaceæ.**Ragi millet.**

“(No. 388. January 5, 1920.) Seeds used chiefly in making native beer.”

For previous introduction, see S. P. I. No. 46295.

50061. *MORAEA* sp. Iridaceæ.

“(No. 398. January 5, 1920. Herb. No. 522.) Bulbs of a small dark-purple, almost black gladioluslike plant.”

50062. *IMPATIENS* sp. Impatiéntaceæ.

“(No. 393. January 5, 1920. Herb. No. 523.) Seeds of an attractive, low, red-stemmed form found in wet clay soils.”

50063. *LACTUCA* sp. Cichoriaceæ.

“(No. 392. January 5, 1920.) Seeds of a cichoriaceous plant.”

50064. *PANICUM* sp. Poaceæ.**Grass.**

“(No. 395. January 5, 1920. Herb. No. 496.) Seeds of a loose-panicled *Panicum*.”

50065. *PHASEOLUS VULGARIS* L. Fabaceæ.**Common bean.**

“(No. 389. January 5, 1920.) Sold to the natives for food.”

50066. (Undetermined.)

“(No. 397. January 5, 1920. Herb. No. 520.) Seeds of a spiny-stemmed tree with small flowers. The wood is useful.”

50067. *ZEA MAYS* L. Poaceæ.**Corn.**

“(No. 386. January 5, 1920.) Corn secured from Elizabethville; the kind sold to natives for food.”

50068. (Undetermined.)

“(No. 396. January 5, 1920.) Seeds of a low bush bearing small orange-colored fruits.”

50069 to 50091.

From Belgian Kongo. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 8, 1920. Quoted notes by Doctor Shantz.

50069. ANNONA SQUAMOSA L. Annonaceæ. Sugar-apple.

"(No. 477. Kongolo. January 22, 1920.) Fruit sweet and of very good flavor."

For previous introduction, see S. P. I. No. 47875.

50070. BRACHYSTEGIA sp. Cæsalpiniaceæ.

"(No. 504. Kindu. January 26, 1920.) Large beans from a forest tree."

50071. CAESALPINIA PULCHERRIMA (L.) Swartz. Cæsalpiniaceæ.

"(No. 476. Kongolo. January 22, 1920.) A red-flowered shrub, probably the same as No. 437 [S. P. I. No. 49688], but much better developed. It is a very attractive ornamental."

For previous introduction, see S. P. I. No. 7266.

50072. CANNA INDICA L. Cannaceæ.

"(No. 480. Malele. January 23, 1920. Herb. No. 609.) A wild canna with a small red flower; very abundant in this section."

50073. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

"(No. 499. Kindu. January 26, 1920.) Seeds secured from a native melon; these seeds are eaten by the natives."

50074 and 50075. CUCURBITA PEPO L. Cucurbitaceæ. Squash.

50074. "(No. 465. Kabwe. January 19, 1920.) Looks like a melon; 8 inches long by 4 inches in diameter; green with white stripes."

50075. "(No. 498. Kindu. January 26, 1920.) A light-yellow squash used as a table vegetable."

50076. FUNTUMIA ELASTICA (Preuss) Stapf. Apocynaceæ. Lagos rubber tree.

"(No. 492. Kindu. January 26, 1920.) A plant common on the forest floor."

For previous introduction, see S. P. I. No. 42367.

50077. HOLCUS SORGHUM EFFUSUS (Hack.) Hitchc. Poaceæ. Kamerun grass.

"(No. 468. Kayombe. January 20, 1920. Herb. No. 602.) Tall, more slender plants; not eaten by the wild elephants which had eaten adjacent grasses."

50078. HOLCUS SORGHUM VERTICILLIFLORUS (Steud.) Hitchc. Poaceæ.

Tabucki grass.

"(No. 471. Kapako, near Ankoro. January 21, 1920. Herb. No. 606.) Seeds from several plants."

50079. HOLCUS SORGHUM L. Poaceæ. Sorghum.

"(No. 479. Kasongo. January 23, 1920. Herb. No. 607.) A tall dark form; abundant here. Like all the others it is branched at every upper node."

50080. MANIHOT ESCULENTA Crantz. Euphorbiaceæ. Cassava.

(*M. utilissima* Pohl.)

"(No. 490. Kindu. January 26, 1920.) From plants partly wild, at the edge of the forest; grown everywhere about here."

50069 to 50091—Continued.

50081. PANICUM MAXIMUM Jacq. Poaceæ. Grass.
 “(No. 472. Kapako. January 21, 1920. Herb. No. 605.) A very tall loose-headed grass.”

For previous introduction, see S. P. I. No. 47032.

50082. PENTACLETHRA MACROPHYLLA Benth. Mimosaceæ.
 “(No. 481. Malele. January 23, 1920.) Very large beans purchased from natives; used as an ornament. Probably from a forest tree.”

For previous introduction, see S. P. I. No. 34351.

50083 and 50084. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

50083. “(No. 491. Kindu. January 26, 1920.) Castor-beans.”

50084. “(No. 503. Kindu. January 26, 1920.) Castor-beans.”

50085 and 50086. SESAMUM ORIENTALE L. Pedaliaceæ. Sesame.

50085. “(No. 478. Kongolo to Malele. January 23, 1920.) Grown by the natives for oil. It has a smaller flower and larger pod than the wild form sent in under No. 475 [S. P. I. No. 50034]. Collected at about kilometer 265.”

50086. “(No. 487. Kindu. January 26, 1920.) Grown by the natives for oil; used in every village. The stems with the nearly ripe pods are placed in a basket in the sun and the seeds allowed to shell out as the pods dry.”

50087. SOLANUM sp. Solanaceæ.

“(No. 493. Kindu. January 26, 1920.)”

50088. SOLANUM sp. Solanaceæ.

“(No. 496. Kindu. January 26, 1920.)”

50089. URENA LOBATA L. Malvaceæ.

“(No. 482. Kibombo. January 24, 1920.) A malvaceous fiber plant used to make a strong burlap or cloth and for other purposes.”

50090. VIGNA SINENSIS (Torner) Savi. Fabaceæ. Cowpea.

“(No. 500. Kindu. January 26, 1920.) Beans secured from a native; these differ from most of the kafir beans previously sent in.”

50091. (Undetermined.)

“(No. 485. From 60 kilometers south of Kindu. January 24, 1920. Herb. No. 619.) A bush with yellow almondlke fruits; said by the natives to be useless.”

50092 to 50101.

From La Plata, Argentina. Seeds presented by Dr. Carlos Spegazzini. Received April 23, 1920.

50092. PROSOPIS ALBA Griseb. Mimosaceæ.

An Argentine tree which yields a gum that is used by the natives of the interior provinces as a dyeing material, giving a dark-red color resistant to the action of light and water. (Adapted from *Trabajos del Museo de Farmacología de la Facultad de Ciencias Médicas, Buenos Aires No. 23, p. 1.*)

50093. PROSOPIS CAMPESTRIS Griseb. Mimosaceæ.

An Argentine shrub with tangled intertwined branches, strong spiny stipules, and pale golden yellow flowers. These shrubs form extensive groups on the plains. (Adapted from *Abhandlungen der Königlichen Gesellschaft der Wissenschaften zu Göttingen, vol. 19, p. 132.*)

50092 to 50101—Continued.

50094. *PROSOPIS CHILENSIS* (Molina) Stuntz. Mimosaceæ. Algaroba.
(*P. juliflora* DC.)

One of the best sources of honey; its seeds are valuable for cattle and poultry.
For previous introduction, see S. P. I. No. 46973.

50095. *PROSOPIS DENUDANS* Benth. Mimosaceæ.

A low shrub from Patagonia, with short graceful leafy branches and twisted pods. The pinnate leaves are in fascicles; the inner surfaces of the petals are woolly. (Adapted from *Hooker, Journal of Botany*, vol. 4, p. 351.)

50096. *PROSOPIS DULCIS* DC. Mimosaceæ.

A thorny tree, 60 feet high, with very deep roots, adapted for live fences. The hard, strong, durable wood when polished resembles mahogany. The sweetish pods, rich in protein, grape sugar, starch, pectin, potash, lime, and phosphoric acid, are used for cattle fodder and even for human food; a sparkling drink called *aloja* is made from the pods. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 421.)

50097. *PROSOPIS FLEXUOSA* (Lag.) DC. Mimosaceæ.

A very smooth tree with short spiny stipules, narrow leaflets, and flowers in cylindrical spikes. The rounded pods are twisted. Native to Chile. (Adapted from *Lagasca, Genera et Species Plantarum*, p. 16.)

50098. *PROSOPIS NIGRA* Hieron. Mimosaceæ.

A stout, low, bushy plant abundant in Corrientes, Argentina, with strong, beautiful wood much used in this region for furniture, doors, windows, carriages, etc. (Adapted from *Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 53.)

50099. *PROSOPIS PANTA* Hieron. Mimosaceæ.

A low, branching, edible-fruited tree which is distinguished from the common algarobas by its longer and wider fruit. The rosy wood is somewhat hard and on being cut emits a pleasant melonlike odor; it is used for posts and for firewood. (Adapted from *Lillo, Contribución al Conocimiento de los Arboles de la Argentina*, p. 55.)

50100. *PROSOPIS PATAGONICA* Speg. Mimosaceæ.

A shrub, native to southern Patagonia, 2 to 3 meters high, with spiny branches. The small green campanulate flowers are in dense cylindrical spikes from the center of the leaf clusters. (Adapted from *Revista de la Facultad de Agronomía y Veterinaria*, Nos. 30 and 31, p. 510.)

50101. *PROSOPIS SILIQUASTRUM* (Lag.) DC. Mimosaceæ.

A Chilean tree about 20 to 30 feet high, growing from Coquimbo to the Cachapoal River. The pods are much relished by animals. The wood is violet-brown, very hard, and used by wheelwrights; it gives very good charcoal. The seed is much appreciated medicinally for cardiac troubles on account of the tannin it contains. (Adapted from *Bulletin de la Société Nationale d'Acclimatation de France*, vol. 65, p. 112.)

50102 to 50206.

From Burttholm, Vereeniging, Transvaal. Seeds presented by J. Burt Davy.
Received May 6, 1920. Quoted notes by Mr. Burt Davy.

50102. *ACACIA GIRAFFAE* Willd. Mimosaceæ.

"Kameel doorn. A valuable timber tree for arid regions in the warm Temperate Zone. The ripe pods are eaten greedily by stock. It thrives in sandy soil, attains a large size, and the dark reddish brown wood is used by the natives in making spoons, knife handles, etc."

For previous introduction, see S. P. I. No. 46805.

50102 to 50206—Continued.

50103. *ACACIA LITAKUNENSIS* Burchell. Mimosaceæ.

“(No. 228/19.) Waterberg district, Transvaal.”

A tree up to 40 feet in height native to the Transvaal, called *moshu* by the natives. It has a singularly twisted bivalve pod (Adapted from *Harvey and Sonder, Flora Capensis, vol. 2, p. 283.*)

For previous introduction, see S. P. I. No. 28662.

50104 and 50105. *ACACIA GLANDULIFERA* Schinz. Mimosaceæ.

50104. “(No. 238/19.) Waterberg district, Transvaal.” A reddish brown shrub, up to 5 meters in height, native to southwestern Africa. It has bipinnate leaves and glanduliferous oblong pods about 35 millimeters long. (Adapted from *Mémoires de l'Herbier Boissier, 1900, p. 111.*)

50105. “Waterberg district, Transvaal.”

50106. *ACACIA LITAKUNENSIS* Burchell. Mimosaceæ.

“(No. 228/19.) Waterberg district, Transvaal.”

50107. *ACACIA PALLENS* (Benth.) Rolfe. Mimosaceæ.

“Seeds of the kopjes doorn, one of the most valuable mine-timber trees of the warmer parts of the bush veldt.”

A medium-sized tree, with a spiny trunk and branches, compound leaves 8 to 10 centimeters long, and dense flower spikes 4 to 6 centimeters long. It is considered a valuable timber tree in the Transvaal, where it is native, the wood being very hard and durable underground. (Adapted from *Kew Bulletin of Miscellaneous Information, 1907, p. 361.*)

50108. *ACACIA ROBUSTA* Burchell. Mimosaceæ.

“(No. 229/19.) Mooku (Sesutu). Collected at Potgietersrust, August 29, 1919.”

A tree, 15 to 25 feet high, with a much-branched dilated crown and much-crowded odorous yellow flowers. It is not uncommon in mixed woods in Angola, where it is native. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants, p. 314.*)

For previous introduction, see S. P. I. No. 28550.

50109 and 50110. *ACACIA SCORPIOIDES* (L.) W. F. Wight. Mimosaceæ.

(*A. arabica* Willd.)

Babul.

“Variety *kraussiana*. Waterberg district, Transvaal.”

The typical form of this species is a pubescent yellow-flowered shrub, which produces the white transparent gum arabic called “gum thus.” The wood is strong and durable and is used for many purposes. A decoction of the bark is used for soap, and the pods are used for tanning.

For previous introduction, see S. P. I. No. 48063.

50109. “Waterberg district, Transvaal.”

50110. “(No. 235/19.) Waterberg district, Transvaal. Small tree; pods eaten by stock.”

50111. *ACACIA* sp. Mimosaceæ.

“(No. 231/19.) Potgietersrust, August 29, 1919.”

50112. *ACACIA GLANDULIFERA* Schinz. Mimosaceæ.

“(No. 238/19.) A shrub collected at Potgietersrust, August 29, 1919.”

50113. *ACACIA* sp. Mimosaceæ.

“(No. 222/19.) Potgietersrust, Waterberg district, Transvaal.”

50102 to 50206—Continued.

50114. ACACIA sp. Mimosaceæ.

"Moobanga. Elizabethville, Belgian Kongo."

50115. ACANTHOSICYOS HORRIDA Welw. Cucurbitaceæ.

"Narra seeds; Protectorate of Southwest Africa. From a very hot, arid region."

This plant, which belongs to the gourd family, is found on the dunes on the coast of the Protectorate of Southwest Africa; it continues to grow with the height of the dune, sending down roots to a considerable depth. The natives are very fond of the juicy flesh of the roundish fruit, which is about 9 inches in diameter. The seeds, which are very nutritious, have been used by Europeans in Cape Town as a substitute for almonds, and the natives are very fond of them. (Adapted from *Kew Bulletin of Miscellaneous Information*, 1907, p. 342.)

For previous introduction, see S. P. I. No. 34734.

50116. AGATHOSMA CHORTOPHILA Eckl. and Zeyh. Rutaceæ.

An erect, many-stemmed evergreen shrubby plant, a foot or more high, native to the Cape of Good Hope. The leaves are erect and oblong-linear, and the flowers are borne in umbels. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 1, p. 435.)

For previous introduction, see S. P. I. No. 47952.

50117. AMYGDALUS COMMUNIS L. Amygdalaceæ.

Almond.

(Prunus amygdalus Stokes.)

"Frost-resisting almond from the high veldt, Transvaal."

50118. ANACARDIUM OCCIDENTALE L. Anacardiaceæ.

Cashew.

"Manicaland, Southern Rhodesia. Collected by Maj. R. Gordon on his 1919 trip."

A tree, up to 40 feet in height, with large leaves and close-grained, strong, and durable wood. The fruit consists of a small nut borne upon a pear-shaped red or yellow fleshy receptacle 2 to 4 inches long. This receptacle is edible and quite harmless when ripe, having an agreeable subacid flavor, and is also very good when cooked. The kidney-shaped nut contains a single large kernel which is very delicious when cooked, having a nutty flavor; it should not be eaten unless cooked, however, because of the poisonous juices of the shell, which must be driven off by heat. (Adapted from *Cook and Collins, Economic Plants of Porto Rico*, p. 75.)

For previous introduction, see S. P. I. No. 45915.

50119. ASPARAGUS sp. Convallariaceæ.

"(No. 239/19.) Potgietersrust; August 29, 1919. A climber: stipular spines very thick, recurved."

50120 and 50121. BALANITES AEGYPTIACA (L.) Delile. Zygophyllaceæ.

A tropical African tree, 3 to 5 meters high, with papery woolly leaves and edible stone fruits 3 centimeters long, rather bitter in flavor. The natives make an intoxicating liquor from these fruits and also eat them raw. The seeds yield an oil known as betu, which is used for food, as a liniment, and to some extent as a medicine. One of the ingredients of the celebrated spikenard perfume is supposed to have been furnished by this tree. (Adapted from *Post*,

50102 to 50206—Continued.

Flora of Syria, p. 199, and from *Kew Bulletin of Miscellaneous Information, Additional Series IX*, p. 138.)

For previous introduction, see S. P. I. No. 44563.

50120. "(No. 162/19; Herb. No. 17914.) *Mookoonkoole*. Kongo trip."

50121. A smaller fruited variety.

50122. *BALANITES MAUGHAMII* Sprague. Zygophyllaceæ.

Manduro.

"Seeds found along the Zambezi River near Chivamba; the boys say it is a thorny tree. Collected by Maj. R. Gordon, August 14, 1919. Native name, *mwanjondo*."

For previous introduction, see S. P. I. No. 39196.

50123. *BAROSMA BETULINA* (Bergius) Bartl. and Wendl. Rutaceæ.

This species is the most valuable species of *Barosma* from a commercial standpoint, as it contains the greatest number of oil glands in its small light-green leaves. It is a rather compact evergreen shrub, attaining a height of 3 or 4 feet, and is found at altitudes of 1,000 to 2,000 feet in South Africa. (Adapted from *The Agricultural Journal of South Africa*, vol. 6, p. 83.)

For previous introduction, see S. P. I. No. 47953.

50124. *BAROSMA CRENULATA* (L.) Hook. Rutaceæ.

Buchu.

The large-leaved buchu is often distinguished as the "true buchu." It is a twiggy shrub, 3 to 4 feet high, with numerous pale purplish flowers produced in October and November. As with the preceding species, *Barosma betulina*, the oil glands on the leaves yield a greenish yellow oil. This oil, when exposed to the cold, deposits a solid *Barosma* camphor which, when purified, has the odor of peppermint. This camphor is used in remedies for bladder and kidney troubles. (Adapted from *The Agricultural Journal, Cape Colony*, vol. 6, p. 146.)

For previous introduction, see S. P. I. No. 47954.

50125. *BARYXYLUM AFRICANUM* (Sond.) Pierre. Cæsalpiniaceæ.

(*Peltophorum africanum* Sond.)

"(No. 224/19.) *M'seschla* (Sesutu). Common and characteristic small tree of Transvaal bush veldt. Wood hard, well colored, and valuable."

A handsome tree, native to Angola, Africa, 20 to 30 feet high, with a habit like *Mimosa*. It has bipinnate leaves, attractive saffron-yellow flowers, and flat 2-seeded pods. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants*, p. 287.)

For previous introduction, see S. P. I. No. 48235.

50126. *BAUHINIA RETICULATA* DC. Cæsalpiniaceæ.

"*Kifumbe*. Elizabethville, Belgian Kongo."

A rather small tree, native to southern tropical Africa, with leathery bilobed leaves and whitish or pinkish flowers. The bark and leaves are crushed and used as an application for wounds and ulcers; the tree is sometimes cultivated in Angola for this purpose. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants*, p. 296.)

50127. *BAUHINIA* sp. Cæsalpiniaceæ.

"From Pemba Island, near Zanzibar. A shrub with white flowers, resembling the Christmas rose."

50128. *BRACHYSTEGIA* sp. Cæsalpiniaceæ.

"A tree known as *Bangiri*, found at Villa Fontes on the Zambezi River. Rather like a poplar, but with darker leaves. The wood seems rather soft, and

50102 to 50206—Continued.

the bark scales off like silver paper. The tree grows about 40 or 50 feet tall, perhaps bigger; and the boys say that the natives use them to make canoes. Collected by Maj. R. Gordon, August 2, 1919."

50129. *BRACHYSTEIA* sp. *Cæsalpiniaceæ*.

"*Moosoombi*; a big acacialike tree; good wood; grows in Manicaland, Rhodesia. Collected by Maj. R. Gordon in October, 1919."

50130. *BRACHYSTEIA* sp. *Cæsalpiniaceæ*.

"*Musamba*. Elizabethville, Belgian Kongo."

50131. *BRACHYSTEIA* sp. *Cæsalpiniaceæ*.

"*Mutawndu*. Elizabethville, Belgian Kongo."

50132. *CAILLIEA NUTANS* (Pers.) Skeels. *Mimosaceæ*.

(*Dichrostachys nutans* Benth.)

"(No. 221/19.) Potgietersrust, Transvaal. *Sikkel-bosch*; *m'tetempa*. A valuable hardwood tree of the bush veldt; much sought for fence posts. It is also ornamental."

For previous introduction, see S. P. I. No. 43645.

50133. *CAPRIOLA INCOMPLETA* (Nees) Skeels. *Poaceæ*.

Grass.

(*Cynodon incompletus* Nees.)

"This species spreads by surface runners and does not produce stolons as does *Cynodon dactylon*. It is difficult to collect seed, as the grass is so closely grazed by stock of all sorts."

For previous introduction, see S. P. I. No. 46567.

50134. *CASSIA* sp. *Cæsalpiniaceæ*.

"*Mupuala*. Elizabethville, Belgian Kongo."

50135. *ACACIA* sp. *Mimosaceæ*.

"(No. 231/19.)"

50136. *CEIBA PENTANDRA* (L.) Gaertn. *Bombacaceæ*.

Kapok.

(*Eriodendron anfractuosum* DC.)

"*Kapok*, vegetable silk."

"The kapok tree, native in the American Tropics, is widely distributed in the Tropics of both hemispheres. It attains a height of 75 to 100 feet, with widespreading branches. It begins to bear seed pods when about 5 years old, and the yield of pods increases with the age of the tree. Well-developed trees under favorable circumstances yield about 7,000 pounds for pillows, mattresses, life preservers, etc., and its use is rapidly increasing." (*L. H. Dewey*.)

For previous introduction, see S. P. I. No. 46522.

50137. *CHENOPODIUM AMARANTICOLOR* Coste and Reynier. *Chenopodiaceæ*.

"From Algeria. When young this forms an excellent substitute for spinach."

For previous introduction, see S. P. I. No. 30381.

50138 to 50140. *CITRULLUS VULGARIS* Schrad. *Cucurbitaceæ*. Watermelon.

50138. "*Golden*. Vereeniging, Transvaal."

50139. "*Vereeniging*, Transvaal."

50140. "*Vereeniging*, Transvaal."

50141. *COFFEA EXCELSA* Cheval. *Rubiaceæ*.

Coffee.

This species of *Coffea* is native to central Africa and has been experimented with in Trinidad, British West Indies. It shows a satisfactory percentage of caffeine and though somewhat bitter, has an excellent flavor. (Adapted from *Bulletin of the Department of Agriculture, Trinidad and Tobago*, vol. 17, p. 62).

50102 to 50206—Continued.

50142. *COFFEA LAURENTII* Wildem. Rubiaceæ.

Coffee.

A white-flowered shrub, native to Belgian Kongo, with dark-green, oval acuminate leaves up to 30 centimeters in length and shortly elliptic 2-seeded fruits. The roundish seeds are 9 to 11 millimeters long. (Adapted from *Actes du Premier Congrès de Botanique*, 1900, p. 234.)

For previous introduction, see S. P. I. No. 32359.

50143. *COIX LACRYMA-JOBI* L. Poaceæ.

Job's-tears.

"A hardy form grown at an altitude of 4,850 feet."

For previous introduction, see S. P. I. No. 48012.

50144. *COMBRETUM* sp. Combretaceæ.

"(No. 245/19.) From The Matoppos, Matabeleland."

50145. *COMBRETUM* sp. Combretaceæ.

"(No. 233/19.) Potgietersrust, Waterberg district, Transvaal."

50146. *COMBRETUM* sp. Combretaceæ.

"Seeds of a tree somewhat like an olive in foliage but much larger, being 40 to 50 feet high. It is a larger spreading tree, giving a good shade; apparently hard wooded. The native name is *Cotamo*. Collected by Maj. R. Gordon at Shemba, Zambezi River, Mozambique, August 8, 1919."

50147. *DIPLO RHYNCHUS* sp. Apocynaceæ.

"*Manyanyata*. A tree near Elizabethville, Belgian Kongo."

50148. *DIPLO RHYNCHUS* sp. Apocynaceæ.

"*Mwenge*."

50149. *ELEPHANTORRHIZA ELEPHANTINA* (Burch.) Skeels. Mimosaceæ.
(*E. burchellii* Benth.)

"Root used in tanning and dyeing stuffs a brown color."

For previous introduction, see S. P. I. No. 46902.

50150. *ERAGROSTIS CURVULA* (Schrud.) Nees. Poaceæ.

Grass.

A very densely tufted South African perennial grass with tender erect stems 1 to 2 feet high and narrow blades sometimes more than a foot in length. (Adapted from *Thistleton-Dyer, Flora Capensis*, vol. 7, p. 599.)

For previous introduction, see S. P. I. No. 38767.

50151. *ERYTHRINA CAFFRA* Thunb. Fabaceæ.

"Magaliesberg, Transvaal."

A tree, 30 to 60 feet high, with prickly branches, trifoliate leaves with broadly ovate leaflets, and scarlet flowers borne in dense, many-flowered racemes. It is native to South Africa. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 2, p. 236.)

50152. *GAZANIA* sp. Asteraceæ.

"A yellow *Gazania* from Mr. Healtie, Addo, Southern Provinces, Nigeria."

50153 and 50154. *GREWIA MONTICOLA* Sond. Tiliaceæ.

A much-branched spreading shrub with densely tomentose twigs and almost sessile, unequally sided leaves. The flowers are borne in axillary few-flowered clusters. The shrub is native to the Transvaal. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 1, p. 226.)

50153. "(No. 236/19.) Potgietersrust, Transvaal. Small evergreen tree."

50154. "(No. 232/19.) Waterberg district, Transvaal. Fruit edible."

50102 to 50206—Continued.

50155. *GUIZOTIA ABYSSINICA* (L. f.) Cass. Asteraceæ.

"*Ramtil*. An African oil seed."

An annual composite, native to tropical Africa, but cultivated in most of the Provinces of India for the sake of the oil-producing seeds. The seed is sown from June to August and harvested in November and December; it prefers light sandy soil. The pale-yellow oil is used for making paints, for lubrication, and for lighting purposes. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 186.)

For previous introduction, see S. P. I. No. 44789.

50156. *HIBISCUS MUTABILIS* L. Malvacææ.

"Elizabethville, Belgian Kongo."

A tall East Indian shrub with large, broad, cordate leaves and large white flowers which change to red. It blooms in summer and late autumn and is considerably planted in the Bermudas in gardens and hedges. (Adapted from *Britton, Flora of Bermuda*, p. 238.)

For previous introduction, see S. P. I. No. 47357.

50157. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ.

Gourd.

"Calabash gourd. Belgian Kongo."

50158. *LANDOLPHIA* sp. Apocynaceæ.

"(No. 146/19.) Elizabethville, Belgian Kongo. Yields a rubber."

50159. *LEONOTIS* sp. Menthaceæ.

A mint allied to the *molonillo* of Porto Rico, a cosmopolitan plant of the Tropics used for various medicinal purposes.

50160. *LINUM USITATISSIMUM* L. Linaceæ.

Flax.

"Sample of linseed from northern Manchuria."

50161. *LOBELIA ERINUS MICRODON* (DC.) Sond. Lobeliaceæ.

Lobelia.

"An ornamental annual, entirely different in habit from the ordinary garden form, being erect instead of diffuse. The fragrant flowers are beautiful shades of blue and white."

For previous introduction, see S. P. I. No. 46808.

50162. *MELINIS MINUTIFLORA* Beauv. Poaceæ.

Molasses grass.

"*Bandeira* grass."

A low compact-growing grass, native to central Brazil, where it is called *capim gordura* on account of a slightly glutinous matter which exudes from the stems. It is very rank and sometimes runs out all other vegetation. Cattle are very fond of this grass. (Adapted from *Journal of the Royal Horticultural Society*, vol. 3, p. 253.)

For previous introduction, see S. P. I. No. 47162.

50163 to 50165. *MIMUSOPS ZEYHERI* Sond. Sapotaceæ.

A large shrub or small tree, native to the Kalahari region, Transvaal. The long-stemmed, oblong-lanceolate leaves are 3 to 4 inches in length, and the edible drupes are about an inch long and sweetish in flavor. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 4, sec. 1, p. 441.)

50163. "*Moople*."

50164. "Magaliesberg, Transvaal."

50165. "Magaliesberg, Transvaal."

50166. *PANICUM LAEVIFOLIUM* Hack. Poaceæ.

Grass.

Variety *pictum*.

50102 to 50206—Continued.

50167 and 50168. PARINARI MOBOLA Oliver. Rosaceæ.

A very handsome tree, 20 to 40 feet high, native to Angola, with dense evergreen foliage, and very ornamental because of the leaves being deep green above with snow-white lower surfaces. The wood is used for the manufacture of furniture and for building, and the elliptic-ovoid fruits, about the size of a hen's egg, are edible, the pulp resembling a mixture of honey and meal in flavor and texture. (Adapted from *Hiern, Catalogue of Welwitsch's African Plants*, p. 320.)

For previous introduction, see S. P. I. No. 32395.

50167. "*Mupundu*. Elizabethville, Belgian Kongo."

50168. "*Momvula* or *macacata*. A dark-leaved evergreen tree which grows in Angola and Manicaland, Rhodesia. It bears good edible fruit much relished by the natives. It also makes a good shade tree."

50169 and 50170. PHASEOLUS ACUTIFOLIUS LATIFOLIUS G. F. Freeman
Fabaceæ. Tepary bean

50169. "Small white haricot beans. Vereeniging, Transvaal."

50170. "Small white haricot beans grown at Burttholm, Vereeniging, Transvaal."

50171. PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean

"Grown successfully at Burttholm, Vereeniging, Transvaal. Seed obtained at a local agricultural show."

50172 and 50173. PHASEOLUS VULGARIS L. Fabaceæ. Common bean

50172. "Amersfoort Show, March, 1917. Small haricot."

50173. "Small white haricot of the Transvaal."

50174. PHORMIUM TENAX Forst. Liliaceæ. New Zealand flax

"From Kenneth Austin. A fiber plant from California, U. S. A."

For previous introduction, see S. P. I. No. 47572.

50175. PHYSALIS sp. Solanaceæ.

"Much used in making jam in the Transvaal. This is not the ordinary *Physalis peruviana*, or Cape gooseberry."

50176. PISUM SATIVUM L. Fabaceæ. Garden pea

"Peas from the Amersfoort Show, March, 1917."

50177. PSEUDOLACHNOSTYLIS sp. Euphorbiaceæ.

"*Mutatye*."

50178. PTEROCARPUS ANGOLENSIS DC. Fabaceæ.

"(No. 242/19.) From the Matoppos, Matabeleland. A timber tree valuable for furniture."

An unarmed tree, native to the western part of central Africa. It has alternate, unequally pinnate leaves, axillary or terminal racemes of flowers, and flat one-seeded, almost round pods. The reddish wood is used in dyeing, and the bark contains a large quantity of tannin. (Adapted from *De Lanessan, Plantes Utiles des Colonies Françaises*, p. 799.)

50179. PTEROCARPUS SERICEUS Benth. Fabaceæ.

"(No. 246/19.) From the Matoppos, Matabeleland."

An unarmed tree, native to South Africa, with alternate, unequally pinnate leaves shining silky beneath or on both sides and oval-roundish pods about 1½ inches long. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 2, p. 264.)

50102 to 50206—Continued.

50180. *PTEROCARPUS* sp. Fabaceæ.

"Waterberg district, Transvaal."

50181. *RHUS* sp. Anacardiaceæ.

"(No. 240/19.) Potgietersrust, August 29, 1919."

50182. *RHUS* sp. Anacardiaceæ.

"(No. 230/19.) Potgietersrust, August 29, 1919."

50183. *SCHOTIA TRANSVAALENSIS* Rolfe. Cæsalpiniaceæ.

"(No. 237/19.) A very ornamental evergreen shade tree, with brilliant scarlet flowers; from the Waterberg district, Transvaal. Native name, *boerboom*."

50184. *STERCULIA* sp. Sterculiaceæ.

"*Nhengati*. A very tall tree; possibly 50 feet of clear trunk before the branches begin. The trunk is white, and the soft wood makes excellent paper; the wood is not so soft as that of the baobab tree (*Adansonia digitata*). Collected by Maj. R. Gordon, March 8, 1919."

50185. *STRYCHNOS* sp. Loganiaceæ.

"(No. 201/19.) Wood halt near Baya, Katanga."

50186. *TAMARINDUS INDICA* L. Cæsalpiniaceæ.

Tamarind.

"A fine shade tree known in Queensland as tamarind; cultivated there but wild in Mozambique. Native name *Malleta*. Collected on the Zambezi River by Maj. R. Gordon, August 6, 1919."

For previous introduction, see S. P. I. No. 47983.

50187 and 50188. *TERMINALIA SERICEA* Burchell. Combretaceæ.

A tree 2 to 10 meters high, with a flat crown, silvery white foliage, and yellow wood. It is called *geelhout* by the Boers and *mugorro* by the Kafirs. It is distributed from South Africa to Angola. (Adapted from *H. Baum, Kunene-Sambesi Expedition, p. 321.*)

50187. "(No. 223/19.) Potgietersrust. *Bosch Vaal-bosch*; *M'wanunu* (Sesutu). A hard, durable wood."

50188. "(No. 247/19.) From the Matoppos, Matabeleland."

50189. *TOUNATEA MADAGASCARIENSIS* (Desv.) Kuntze. Cæsalpiniaceæ.
(*Swartzia madagascariensis* Desv.)

An African tree, 12 to 30 feet in height, with very heavy wood which is deep red in color. It is said to be excellent for piano manufacture and good for all high-class furniture work. It is a very durable and valuable timber. (Adapted from *Holland, Useful Plants of Nigeria, vol. 1, p. 248.*)

50190. *UAPACA SANSIBARICA* Pax. Euphorbiaceæ.

"*Mahobohobo*, or *massangi*: both names are correct. A large-leaved evergreen with wood used for timber and edible fruits. Collected by Maj. R. Gordon in Manicaland, Rhodesia."

For previous introduction, see S. P. I. No. 32394.

50191. *UAPACA* sp. Euphorbiaceæ.

"*Musuku*. Elizabethville, Belgian Kongo."

50192. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ.

Cowpea.

"Cowpea grown by natives of Pondoland."

50102 to 50206—Continued.

50193. *VITEX REHMANNI* Guerke. Verbenaceæ.

"(No. 226/19.) Potgietersrust. *Mookwele* (Sesutu). Common and characteristic tree up to 20 feet high."

A shrub with opposite 3 or 5 foliolate leaves with elliptic profusely glandular leaflets, axillary cymes of bell-shaped flowers, and cone-shaped drupes about a quarter of an inch long. It is native to Natal and the Kalahari region, Transvaal. (Adapted from *Thiselton-Dyer, Flora Capensis, vol. 5, sec. 1, p. 214.*)

50194 and 50195. *ZIZIPHUS MUCRONATA* Willd. Rhamnaceæ.

A much-branched tree, 15 to 20 feet high, found in South Africa and central Africa. The ovate leaves are up to 2 inches in length, the yellowish flowers are borne in axillary cymes, and the red drupes are about the size of cherries. (Adapted from *Harvey and Sonder, Flora Capensis, vol. 1, p. 475.*)

50194. "Valuable wood."

50195. "Good wood for fence posts, hard and durable and drought resistant."

50196. *ZIZIPHUS* sp. Rhamnaceæ.

"*Kankole*. Elizabethville, Belgian Kongo."

50197. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 227/19.) Potgietersrust."

50198. *ZIZIPHUS* sp. Rhamnaceæ.

"(No. 243/19.) From the Matoppos, Matabeleland. Much like *Ziziphus mucronata*, but the fruits are much larger."

50199. (Undetermined.)

"(No. 142/19.) *Mooloo'alwa*. Elizabethville, Belgian Kongo. There are two trees going under this name; this is the lesser or 'kiloko' sort."

50200. (Undetermined.)

"Vereeniging, Transvaal."

50201. (Undetermined.)

"(No. 234/19.) Potgietersrust. An ornamental shrub."

50202. (Undetermined.)

"Shrub or small tree."

50203. (Undetermined.)

"(No. 225/19.) Potgietersrust. *Mookwerikweri* (Sesutu). Small evergreen tree."

50204. (Undetermined.)

"*Maviling hombwa*. Tree near Elizabethville, Belgian Kongo."

50205. (Undetermined.)

"Collected in Manicaland, Rhodesia, by Maj. R. Gordon."

50206. (Undetermined.)

"*Kimpampa*. Elizabethville, Belgian Kongo. Ornamental tree."

50207. *BRACHYSTEGLIA* sp. Cæsalpiniaceæ.

From Kafue, Northern Rhodesia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Numbered June 7, 1920.

"(No. 300 in part. Bolenga Camp on the Kafue River. November 25, 1919.) *Mombo* (Chinyanja). A large, spreading, acacialike tree with large pods and large, flat seeds; it is most useful as well as ornamental. The seed is eaten by the natives

and by baboons. The bast fiber, formerly used to make cloth, is now used whenever fiber is required. The bark when pounded furnished the chief cloth used by the natives before the introduction of cloth by the whites." (*Shantz.*)

50208 to 50210.

From Hobart, Tasmania. Seeds presented by L. A. Evans, Acting Director of Agriculture. Received May 14, 1920.

"Collected on the slopes of Mount Wellington at an altitude of about 3,000 feet." (*Evans.*)

50208. *EUCALYPTUS COCCIFERA* Hook.f. Myrtaceæ.

A fine tree with leaves of two forms—in the young tree they are opposite, sessile, oval, and more or less mucronate; in the adult form they are alternate, stalked, lanceolate, and hook pointed. The young branches are cylindrical and very white; the flowers are usually in tufts of seven. (Adapted from *Gardeners' Chronicle, third series, vol. 3, p. 798.*)

For previous introduction, see S. P. I. No. 10505.

50209. *EUCALYPTUS MUELLERI* T. B. Moore. Myrtaceæ.

A magnificent tree, 100 to 200 feet high, branchless for half its height, with light red-colored wood extremely hard and heavy and of a stringy, close-grained character. The thick shining leaves are crenulated. The tree is native to Tasmania at altitudes of 2,000 feet; it grows luxuriantly in unsheltered conditions and in poor soil. (Adapted from *Mueller, Proceedings of the Royal Society of Tasmania, p. 208.*)

For previous introduction, see S. P. I. No. 38730.

50210. *EUCALYPTUS URNIGERA* Hook.f. Myrtaceæ.

A small tree, 15 to 20 feet high in its native home on the summits of the Tasmanian Mountains, but occasionally reaching a height of 150 feet in cultivation; one of the hardiest of the eucalypts. The leaves of the young tree are opposite, sessile, orbicular, and green; the leaves on the adult plant are alternate, stalked, elliptic, and always green, never glaucous. The pale-yellow flowers are in groups of three, followed by urn-shaped fruits. Baron von Mueller says of this species: "It is particularly hardy and may become of sanitary importance to colder countries in malarial regions, the foliage being much imbued with antiseptic oil." (Adapted from *Gardeners' Chronicle, third series, vol. 3, pp. 460, 798.*)

For previous introduction, see S. P. I. No. 1679.

50211 to 50217.

From Chama, Coban, Guatemala. Seeds collected by Harry Johnson. Received May 3, 1920. Quoted notes by Mr. Johnson.

50211. *ANNONA RETICULATA* L. Annonaceæ.

Custard-apple.

"An upright, open, heavy-bearing tree, 25 feet high, with smooth dark-green leaves 8 to 10 inches long and 2 inches broad, with acuminate tip and base. The fruit, 4 inches in length, is of a very pleasing light-red color, like the blush on the nectarine. The skin is thin, not reticulated, but the facets are slightly visible. The flesh is of the color and texture of a ripe Bartlett pear, with a flavor similar to that of the cherimoya. The seeds surround a central core which is compactly inclosed in smooth pulp. There is only one tree that I know of here at Jocolo."

For previous introduction, see S. P. I. No. 45955.

50211 to 50217—Continued.

50212. *BEGONIA CONVALLARIODORA* C. DC. Begoniaceæ.

"Seeds collected in Chama. from a widely distributed species which I first saw at Mosca. It grows most profusely along roadsides in the second growth, scrambling over the shrubs and undergrowth and hanging down from the banks. The white flowers, sometimes tinged on the outside with red, are produced freely in large panicles near the ends of the shoots."

50213. *BEGONIA* sp. Begoniaceæ.

"Collected about 2 miles out from Tactic on the road leading to Tucuru. A rhizomatous species with large, slightly hairy leaves 10 to 14 inches in diameter on petioles 18 to 36 inches long. The flower spike is 2 to 3 feet in length; the pods are strongly winged."

50214. *Gossypium hirsutum* L. Malvaceæ. Cotton.

"Seeds of the cotton grown around the Lago Izabal, at Jocolo, said to have been imported many years ago from the United States."

For previous introduction, see S. P. I. No. 41917.

50215. *Gossypium* sp. Malvaceæ. Cotton.

"This variety is said to grow into quite a tree. It is common in the region around Jocolo."

50216. *Gossypium* sp. Malvaceæ. Cotton.

"This variety grows into a large shrub or small tree with yellow flowers. It is the common form at Chama."

50217. *Phaseolus lunatus* L. Fabaceæ. Lima bean

"Seeds of a black *butter bean*, as it is called here. There are two to four seeds in a pod, usually three."

50218. *Chrysobalanus icaco* L. Rosaceæ. Icaco.

From Chama, Coban, Guatemala. Seed collected by Harry Johnson, Received May 22, 1920.

"A fruit similar in appearance to a large ripe olive, but of sweet though rather insipid flavor. The shrub grows along the lake shore, hanging over the water, and is a free bearer." (Johnson.)

50219 and 50220.

From Kigoma, Belgian Kongo. Fruits collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 12, 1920. Quoted notes by Doctor Shantz.

50219. *Citrus* sp. Rutaceæ.

"(No. 617. Kigoma. February 20, 1920.) Fruit of a lime, very abundant here and used much more than the lemon."

50220. *Citrus* sp. Rutaceæ.

"(No. 619. Kigoma. February 20, 1920.) A rough lemon grown here."

50221 to 50287.

From Belgian Kongo. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received April 12, 1920. Quoted notes by Doctor Shantz.

50221. *Amaranthus* sp. Amaranthaceæ. Amaranth

"(No. 547. Kongolo. February 6, 1920.) The young plants and leaves are used as greens."

50221 to 50287—Continued.

50222. *BIXA ORELLANA* L. Bixaceæ.

Annatto tree.

"(No. 610. Ujiji. February 17, 1920. Herb. No. 675.) An ornamental plant; pigment is rubbed from the seeds and used by the natives as coloring material."

For previous introductions, see S. P. I. No. 44954.

50223. *CAPSICUM ANNUUM* L. Solanaceæ.

Red pepper.

"(No. 557. Kongolo. February 7, 1920.) A large paprika, 2 inches long."

For previous introduction, see S. P. I. No. 47010.

50224. *CEIBA PENTANDRA* (L.) Gaertn. Bombacaceæ.

Kapok.

(*Eriodendron anfractuosum* DC.)

"(No. 613. Ujiji. February 17, 1920.) Grown as a street tree."

For previous introduction, see S. P. I. No. 46522.

50225. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

"(No. 560. Kabalo. February 8, 1920.) A white-fleshed, red-seeded watermelon with a fairly good flavor."

50226. *CROTALARIA STRIATA* Schrank. Fabaceæ.

"(No. 572. Albertville. February 12, 1920. Herb. No. 665.) A tall leguminous plant, about 4 feet high."

For previous introductions, see S. P. I. No. 34670.

50227. *DACTYLOCTENIUM AEGYPTIUM* (L.) Richter. Poaceæ.

Grass.

(*Eleusine aegyptiaca* Desf.)

"(No. 562. Kabalo. February 8, 1920.) A ruderal."

For previous introduction, see S. P. I. No. 38017.

50228. *DATURA METEL FASTUOSA* (L.) Safford. Solanaceæ.

"(No. 602. Kigoma. February 14, 1920. Herb. No. 669.)"

For previous introduction, see S. P. I. No. 47671.

50229. *Gossypium* sp. Malvaceæ.

Cotton.

"(No. 556. Kongolo. February 7, 1920.) One capsule with four carpels."

50230. *Gossypium* sp. Malvaceæ.

Cotton.

"(No. 564. Kabalo. February 9, 1920.) This cotton, collected at Kiluba, has a very long pod, and the seeds are closely packed together with no lint between them as in kidney cotton."

50231. *Gossypium* sp. Malvaceæ.

Cotton.

"(No. 575. Albertville, February 12, 1920. Herb. No. 663.) A cotton plant 6 feet high with long pods."

50232. *HETEROPOGON CONTORTUS* (L.) Beauv. Poaceæ.

Grass.

"(No. 576. Albertville. February 12, 1920.) A low grass about a foot high, which grows in dense masses on poor sandy soil."

For previous introduction, see S. P. I. No. 15357.

50233 and 50234. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc.

Poaceæ.

Tabucki grass.

50233. "(No. 568. Albertville. February 10, 1920.) Darker and more hairy than the normal plants of this species, 8 feet high."

50234. "(No. 569. Albertville. February 10, 1920.) Seed collected from many different plants."

50221 to 50287—Continued.

- 50235 and 50236. *HOLCUS SORGHUM* L. Poaceæ.
(*Sorghum vulgare* Pers.)

Sorghum

50235. "(No. 600. Kigoma. February 14, 1920.) A white kafir called mtama, from the market."

50236. "(No. 603. Kigoma. February 14, 1920.) A white kafir (mtama) purchased in the market."

50237. *IPOMOEA PES-CAPRAE* (L.) Roth. Convolvulaceæ.
(*I. biloba* Forsk.)

"(No. 565. Albertville. February 9, 1920.) From the sandy shore of Lake Tanganyika."

For previous introduction, see S. P. I. No. 47921.

50238. *QUAMOCLIT PENNATA* (Desr.) Voigt. Convolvulaceæ.

"(No. 549. Kongolo. February 6, 1920. Herb. No. 653.) An ornamental vine."

50239. *JATROPHA CURCAS* L. Euphorbiaceæ.

"(No. 611. Ujiji. February 17, 1920.) A crotonlike oil plant, the same as No. 459 [S. P. I. No. 50021]. The Belgians are trying to extract the oil here in the Ujiji soap factory."

For previous introduction, see S. P. I. No. 47916.

50240. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ.

Tomato

"(No. 548. Kongolo. February 6, 1920.) A small red tomato abundant here; the only tomato in the market."

50241. *MANIHOT GLAZIOVII* Muell. Arg. Euphorbiaceæ.

Ceara rubber

"(No. 612. Ujiji. February 17, 1920.) The rubber tree, also grown as an ornamental or street tree."

For previous introduction, see S. P. I. No. 46809.

50242. *NICOTIANA TABACUM* L. Solanaceæ.

Tobacco

"(No. 558. Kongolo. February 7, 1920.) Native tobacco; very strong bouquet of good aroma."

50243. *PACHYLOBUS* sp. Balsameaceæ.

"(No. 550. Kongolo. February 7, 1920.) A large forest tree with nuts edible when boiled; the nuts also yield an oil."

50244. *PANICUM MAXIMUM* Jacq. Poaceæ.

Grass

"(No. 544. Kongolo. February 5, 1920. Herb. No. 651.) A large Panicum."

For previous introduction, see S. P. I. No. 47032.

50245. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ.

Pearl millet

(*P. typhoideum* Pers.)

"(No. 599. Kigoma. February 14, 1920.) From the market."

For previous introduction, see S. P. I. No. 48095.

- 50246 and 50247. *PENNISETUM SETOSUM* (Swartz) L. Rich. Poaceæ. Grass

50246. "(No. 542. Kongolo. February 6, 1920. Herb. No. 648.) A large Setarialike grass, prominent in this region."

50247. "(No. 543. Kongolo. February 6, 1920.) A large grass similar to the previous number [S. P. I. No. 50246], but with larger heads."

50221 to 50287—Continued.

50248 and 50249. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

50248. "(No. 597. Kigoma. February 14, 1920.) A small green bean used by the Arabs."

50249. "(No. 601. Kigoma. February 14, 1920. Herb. No. 668.) A low bush form grown by the natives; seeds and pods very small."

50250 to 50267. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"(Kigoma. February 14, 1920.) Beans from the region of Usumbura, shipped through Kigoma and sold in the market in Albertville. They constitute one of the staples here."

50250. "(No. 577.) A large white bean."

50251. "(No. 578.) Similar to the navy bean."

50252. "(No. 579.) A greenish yellow bean."

50253. "(No. 580.) A brown bean."

50254. "(No. 581.) A black bean."

50255. "(No. 582.) A brownish yellow bean; striped."

50256. "(No. 583.) Light yellow with dark stripes."

50257. "(No. 584.) Reddish bean with dark stripes."

50258. "(No. 585.) Reddish brown bean."

50259. "(No. 586.) Purple-mottled bean."

50260. "(No. 587.) Purple, red-mottled bean."

50261. "(No. 589.) Deep-red bean, not mottled."

50262. "(No. 590.) Deep-purple bean."

50263. "(No. 591.) Gray bean."

50264. "(No. 592.) Reddish bean with purple stripes."

50265. "(No. 593.) Red bean with white mottling."

50266. "(No. 594.) Reddish tan bean."

50267. "(No. 595.) Unassorted remainder."

50268. *PHYSALIS ANGULATA* L. Solanaceæ.

"(No. 546. Kongolo. February 6, 1920.) The plants are more glaucous and smaller than those of *Physalis edulis*, and the berries are sweeter."

50269. *PISUM SATIVUM* L. Fabaceæ. Garden pea.

"(No. 596. Kigoma. February 14, 1920.) Sold here in the market; also from the Urumbura region."

50270. *RICINODENDRON* sp. Euphorbiaceæ.

"(No. 559. Kabalo. February 8, 1920.) The ripe fruit is greenish with a pulp about one-fourth of an inch deep and quite sweet. The pulp is used, but the nut is of the most value, both as food and for oil."

50271 to 50277. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

50271. "(No. 566. Kabalo to Albertville. February 10, 1920.) Castor-bean."

50272. "(No. 604. Ujiji. February 17, 1920.) Small-seeded castor-oil plant; the best oil variety grown here. There is a plant in Ujiji for extracting the oil and plantations for growing the raw material."

50273. "(No. 605. Ujiji. February 17, 1920.) A large-seeded variety similar to No. 609 [S. P. I. No. 50277]."

50221 to 50287—Continued.

50274. "(No. 606. Ujiji. February 17, 1920.) A bean intermediate in size between Nos. 605 and 604."

50275. "(No. 607. Ujiji. February 17, 1920.) A very large reddish tinted castor-bean."

50276. "(No. 608. Ujiji. February 17, 1920.) A large deep-brown bean."

50277. "(No. 609. Ujiji. February 17, 1920.) Mixed castor-beans."

50278. *SOLANUM* sp. Solanaceæ.

"(No. 545. Kongolo. February 6, 1920. Herb. No. 646.) A *Solanum* similar to the wonderberry."

50279. *TITHONIA ROTUNDIFOLIA* (Mill.) Blake. Asteraceæ.
(*T. speciosa* Griseb.)

"(No. 570. Albertville. February 10, 1920.) A peculiar composite which looks like a single dahlia but has mintlike foliage. It is cultivated as an ornamental."

For previous introduction, see S. P. I. No. 43782.

50280 and 50281. *TRICHOLAENA ROSEA* Nees. Poaceæ. Natal grass

50280. "(No. 561. Kabalo. February 8, 1920.) Abundant on sandy soil."

50281. "(No. 573. Albertville. February 12, 1920.) Growing on sandy soil. It is a foot high and accustomed to long periods of drought."

50282. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea

"(No. 551. Kongolo. February 7, 1920.) Small red beans from the native market."

50283. *VIGNA* sp. Fabaceæ.

"(No. 571. Albertville. February 10, 1920.) A wild vine along the lake shore."

50284 to 50286. *ZEA MAYS* L. Poaceæ. Corn

50284. "(No. 552. Kongolo. February 7, 1920.) Red flint corn."

50285. "(No. 553. Kongolo. February 7, 1920.) White flint corn."

50286. "(No. 554. Kongolo. February 7, 1920.) White and blue flint corn."

50287. (Undetermined.)

"(No. 574. Albertville. February 12, 1920. Herb. No. 574.) A tree."

50288 to 50306.

From Kew, England. Seeds presented by Sir David Prain, director, Royal Botanic Gardens. Received May 3, 1920.

50288. *BERBERIS TISCHLERI* C. Schneid. Berberidaceæ. Barberry

A shrub about 2 meters high, with leaves paler beneath, yellow flowers, and yellowish red fruits; native to western Szechwan at altitudes of 2,300 to 3,800 meters. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 1, p. 355.)

For previous introduction, see S. P. I. No. 43825.

50289. *BETULA ERMANI* Champ. Betulaceæ. Birch

A tree up to 100 feet in height, with the bark of the trunk creamy white and peeling, that of the branches orange-brown; native to Manchuria, Korea, and Japan. It is said to be liable to injury by spring frosts, owing to its early start

50288 to 50306—Continued.

into growth. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 1, p. 256.)

For previous introduction, see S. P. I. No. 40154.

50290. *BETULA KENAICA* W. H. Evans. Betulaceæ. Birch.

A tree, native to the Alaskan coast from Cook Inlet southward to the head of Lynn Canal, 30 to 40 feet high, with widespreading branches. The stout branchlets are marked with red-brown lenticels becoming darker after 2 or three years. The thin, furrowed bark is dark brown or nearly black near the base of the trunk, grayish white or light reddish brown higher up. The leaves are dull dark green above, pale yellow-green below. (Adapted from *Sargent, Manual of the Trees of North America*, p. 205.)

50291. *EUONYMUS USSURIENSIS* Maxim. Celastraceæ.

A shrub or small tree with short, thick branches, broadly elliptical leaves, and small flowers with yellow anthers. (Adapted from *Bulletin de L'Académie Impériale des Sciences de St. Pétersbourg*, vol. 27, p. 450.)

50292. *PYRACANTHA CRENULATA* (Don) Roemer. Malaceæ.
(*Crataegus crenulata* Roxb.)

Variety *rogersiana*.

A very attractive, rapid-growing shrub with an abundance of white flowers in May, followed in October by a profusion of bright-red berries. It is native to the Himalayas and China. (Adapted from *The Garden*, vol. 78, p. 563.)

50293. *RUBUS ALLEGHANIENSIS* Porter. Rosaceæ. Blackberry.
(*R. nigrobaccus* Bailey.)

One of the numerous forms of the cultivated blackberry, often known as *Rubus nigrobaccus*, but apparently only a more or less stable form of *R. alleghaniensis*.

50294. *RUBUS BIFLORUS QUINQUEFLORUS* Focke. Rosaceæ.

A large vigorous-growing bush with attractive, stout, "whitewashed" stems, 12 to 15 feet in height, and ornamental foliage. This plant produces rich, golden yellow, raspberrylike fruits of pleasant flavor, which may prove of considerable value in the hands of the hybridist. (Adapted from *The Garden*, vol. 76, p. 624.)

For previous introduction, see S. P. I. No. 42586.

50295. *RUBUS COREANUS* Miquel. Rosaceæ.

An upright-growing Chinese bramble which is self-supporting. The bluish white stems are 7 or more feet in length and are furnished abundantly with handsome pinnate leaves which are about 8 inches long and consist of seven to nine leaflets. The stems are armed with straight prickles; those on the petioles are hooked. The fruits are small, red to nearly black, and edible. Native to central and western China at altitudes of 6,000 feet. (Adapted from *Gardeners' Chronicle*, third series, vol. 51, p. 148.)

For previous introduction, see S. P. I. No. 42585.

50296. *RUBUS FLOSCULOSUS* Focke. Rosaceæ.

A vigorous Chinese shrub, 10 to 15 feet high, with stout, erect, dark purplish brown stems, smooth except for a few spines. The pinnate leaves, smooth above, are covered beneath with a close white felt. The small pink flowers are followed by small, very dark red or black fruit. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 458.)

For previous introduction, see S. P. I. No. 29976.

50288 to 50306—Continued.

50297. *RUBUS GIRALDIANUS* Focke. Rosaceæ.

A vigorous, strikingly handsome *Rubus* with stout blue-white stems, 12 to 15 feet high. The foliage is decidedly ornamental and the stems are very showy, particularly in winter. (Adapted from *Gardeners' Chronicle*, third series, vol. 51, p. 147.)

For previous introduction, see S. P. I. No. 40594.

50298. *RUBUS LASIOSTYLUS* Focke. Rosaceæ.

A stout, hardy plant, strikingly ornamental with its thick, very spiny stems, of a peculiar whitened character, 4 to 12 feet high. The pinnate leaves are dark green above and silvery white beneath; when young, the leafstalks and veins are suffused with rose. The magenta red flowers are followed by curious white, woolly fruits which are sweet to the palate and are said to be used for food in China, where it is native. (Adapted from *Gardeners' Chronicle*, third series, vol. 51, p. 167; and *Gardening Illustrated*, vol. 28, p. 631.)

For previous introduction, see S. P. I. No. 44402.

50299. *RUBUS MESOGÆUS* Focke. Rosaceæ.

A central Chinese bramble with slender climbing stems, 4 to 5 meters long, rather small flowers, and small globose berries. (Adapted from *Focke, Species Ruborum, Bibliotheca Botanica*, vol. 72, p. 204.)

For previous introduction, see S. P. I. No. 42589.

50300. *RUBUS NUTKANUS* Moc. Rosaceæ.

The salmonberry of Alaska, with large, sweet, pleasant-flavored fruits and no prickles. The plant dies down to the root annually; the seeds may rest for fully 15 years under ground and yet be able to germinate. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 476.)

50301. *RUBUS PARVIFOLIUS* L. Rosaceæ.

An East Asian and Australian plant which produces much finer fruit in the mountains of Australia than in the lowlands. It extends as a native to Japan. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 477.)

For previous introduction, see S. P. I. No. 29978.

50302. *RUBUS PHOENICOLASIUS* Maxim. Rosaceæ.

A very ornamental Japanese wineberry, 8 to 10 feet high, with the branches and fruit clusters covered with a dark-red hairy pubescence that contrasts delightfully with the green leafage and its white reverse surface. This bramble is remarkably productive and is very decorative with its long full sprays of berries ranging from pale yellow, where the red calyces have but just expanded, to the polished crimson of the ripe berries. The ripe fruit is agreeable in flavor and has a certain sharp, brisk quality in the taste. The plant is as hardy as the raspberry and prefers damp situations. (Adapted from *Gardening Illustrated*, vol. 19, p. 235.)

For previous introduction, see S. P. I. No. 36071.

50303. *RUBUS PUBESCENS* Weihe. Rosaceæ.

A very robust bramble native to Europe, with strong canes which, however, do not ascend to any considerable height without support. The fruit is well developed and pleasant flavored.

For previous introduction, see S. P. I. No. 42591.

50288 to 50306—Continued.

50304. *RUBUS VEITCHII* Rolfe. Rosaceæ.

One of the handsomest of all the Chinese brambles. The plants grow to a height of 6 to 7 feet; have blue-white stems and attractive, much-divided fernlike foliage. At first erect, the stems are gracefully drooping with age. Both stems and petioles are very spiny. The pinnate leaves are dark green above and white beneath. The purple flowers are borne in small terminal panicles; the blue-black fruits are of moderate size. (Adapted from *Gardeners' Chronicle, third series, vol. 51, p. 148.*)

50305. *RUBUS XANTHOCARPUS* Bur. and Franch. Rosaceæ.

A Chinese trailing plant with large, ovate, bright-yellow fruits which are fragrant and palatable.

For previous introduction, see S. P. I. No. 24155.

50306. *STAPHYLEA PINNATA* L. Staphyleaceæ.

A treelike shrub, widely distributed throughout Europe to western Asia, with deciduous leaves and terminal clusters of small flowers and much-inflated membranaceous podlike fruits. (Adapted from *Gardening Illustrated, vol. 39, p. 476.*)

50307. *SOLANUM TUBEROSUM* L. Solanaceæ. Potato.

From Teteko, New Zealand. Tubers presented by Charles G. Hallett. Received May 11, 1920.

"Tubers of a peculiar potato that grows in this district. I was given one little tuber by a Government overseer of rabbiters who had taken some tubers from the spring in which they grow and had grown them in his garden for a year or so. He assured me that frost does not affect the plants when growing in the spring. The tubers I am forwarding you grew in my garden from the one I received from the rabbitier, so they have been out of the water for two or three generations." (*Hallett.*)

"On the northern side of the Rangitaiki River, in the Bay of Plenty district, opposite the old Maori settlement called Waiohau, where a splendid spring of fresh water issues from the base of a hill and flows between banks heavily fringed with water cress to the near-by river, a remarkable instance of a plant forsaking its normal environment may be observed. There water cress and potato plants flourish together, and tubers are found among the cress roots from 12 to 18 inches under water. Some of the tubers are almost in midstream, others may be found snuggled into the bank fiber, and the foliage of cress and potato mingle on the water surface. It may be that the plants are dependent for their growth upon the earthy particles held by the cress roots and also that there is some fertilizing quality in the water which drains from the great volcanic area. The potatoes when cooked are not all mealy, but waxy. They grow to a fair size and are fit for eating as early as August.

"I forwarded some of the tubers for testing at the Moumahaki Experimental Farm last season. The manager's report on the trial is as follows:

"Some of the water-potato tubers were planted on August 31, 1916, in the potato-variety trials, having the same treatment, soil, and manured as the 66 other varieties planted on the same date. The potato in question came away vigorously and is distinct in foliage, with a large blue flower, bearing seed apples naturally. The crop was lifted on February 6, 1917, and was free from disease. The yield was as follows: Marketable tubers (table and seed), at the rate of 11 tons per acre; pig potatoes, 1.87 tons; total 12.87 tons. The cooking test made on February 6, by boiling, showed that the potatoes kept their color 24 hours, but they could not be classed as good cookers. The starch content is believed to be high. About the same date one root was lifted, and the tubers were put into running stream water. In less than a month the tubers had rotted."

"Despite the negative result recorded in the last part of this report, the circumstances surrounding the growth of the tubers in the Rangitaiki spring may indicate, if only slightly, a possible reversion of this long-domesticated plant to an ancestral habit." (*D. M. Ross, New Zealand Journal of Agriculture, vol. 15, p. 209.*)

50308 and 50309.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received May 4, 1920.

50308. IPOMOEA sp. Convolvulaceæ. Morning-glory.

"A white-flowered perennial Ipomoea. The plant is of medium growth and blossoms during the winter months, the tourist season." (*Wester.*)

50309. CITRUS HYSTRIX DC. Rutaceæ. Cabuyao.

"Seeds of an unusually productive tree; fruits rather more oblate than the ordinary run of this species." (*Wester.*)

For previous introduction, see S. P. I. No. 42364.

50310. IPOMOEA sp. Convolvulaceæ. Morning-glory.

From Coban, Guatemala. Seeds presented by Harry Johnson. Received May 4, 1920.

"A rather vigorous vine not more than 25 feet long in the specimens seen, with leaves $2\frac{1}{2}$ inches in length. The flowers, which are borne in clusters of two or more on 3-inch pedicels, are $2\frac{1}{2}$ inches in diameter, salver shaped, and are a peculiar shade of terra cotta, which is a novel color. It is quite free flowering, and here it is a perennial. I have seen it only in the hot lowlands. Seeds collected at Papalha." (*Johnson.*)

50311. LILIUM PHILIPPINENSE Baker. Liliaceæ. Benguet lily.

From Manila, Philippine Islands. Bulbs presented by M. J. Oteyza, forester in charge of the Baguio district in Benguet, Luzon, through Elmer D. Merrill, director, Bureau of Science. Received May 5, 1920.

A very beautiful hardy white lily with a fragrance indistinguishable from that of a gardenia. The plant is exceedingly dainty, with slender recurving leaves not more than one-fifth of an inch wide. The flowers are 8 inches long with a very slender tube; the segments are spread out only near the apex. The bulbs will flower in less than half the time required to force *Lilium longiflorum*. (Adapted from *Gardeners Chronicle, third series, vol. 36, p. 210.*)

For previous introduction, see S. P. I. No. 45570.

50312. NICOTIANA TABACUM L. Solanaceæ. Tobacco

From Smyrna, Turkey. Seeds presented by George Horton, American consul general. Received May 5, 1920.

"Seeds of the Turkish tobacco grown in the region about Smyrna. E. M. Yantis of the Gary Tobacco Co., states that only one type is grown in this region." (*Horton.*)

50313. CEDRUS ATLANTICA Manetti. Pinaceæ.

From Tangier, Morocco. Seeds presented by Jules Goffart, Société d'Horticulture. Received June 1, 1920.

One of the finest evergreens, of vigorous growth and pyramidal form; it has dense light silvery foliage. In its native territory, the Atlas Mountains of Algeria, it reaches a height of 120 feet. It thrives splendidly on the Pacific coast of the United States and can be grown in a sheltered position on the Atlantic coast as far north as New York. (Adapted from *Florists' Review, vol. 34, p. 78.*)

50314. LOBELIA NICOTIANAEFOLIA Heyne. Campanulaceæ.

From Manila, Philippine Islands. Seeds presented by Elmer D. Merrill, director, Bureau of Science. Received May 6, 1920.

"The plant is a tall, coarse herb, attaining a height of from 2 to 3 meters, the stem often being 3 centimeters in diameter. It grows on the mountains of northern Luzon at altitudes of 1,500 to 2,000 meters in damp ravines, in open places, and in thickets. The inflorescence is terminal, consisting of numerous pale-blue flowers. The plant has some possibilities as an ornamental on account of its very luxuriant growth." (Merrill.)

50315 to 50324. VICIA spp. Fabaceæ.

From Erfurt, Germany. Seeds purchased from Haage & Schmidt. Received May 6, 1920.

A collection of vetch seeds introduced for the Office of Forage-Crop Investigations.

50315. VICIA BITHYNICA L.

An annual upright or climbing vetch, with numerous branching stems 4 to 20 inches long. The leaflets, of which there are from one to three pairs, are lanceolate or even linear, and the rather large flowers have yellowish wings and keels and purple-violet standards which finally become blue. Native to the Mediterranean regions. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, pt. 2, p. 983.)

50316. VICIA ANGUSTIFOLIA Grufberg.

An annual European vetch 1 to 2 feet long, with nearly sessile leaves made up of 3 to 7 pairs of linear-lanceolate leaflets and bearing purple flowers about half an inch long. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, pt. 2, p. 971.)

50317. VICIA SATIVA L.

For previous introduction see S. P. I. No. 32195.

50318. VICIA DASYCARPA Ten.

"An annual or sometimes perennial European vetch with slender angled stems, about 10 pairs of ovate to linear leaflets, and flowers which are whitish below and blue-violet above, becoming blue with age. Produces good seed crops." (P. L. Ricker.)

For previous introduction, see S. P. I. No. 32165.

50319. VICIA SATIVA L.

Received as *Vicia striata*, but the seeds do not agree with that species.

50320. VICIA SATIVA L.

Received as *Vicia peregrina*, but the specimens do not agree with that species.

50321. VICIA SATIVA L.

Received as *Vicia picta*, but specimens grown from these seeds are *Vicia sativa*.

50322. VICIA ATROPURPUREA Desf.

Received as *Vicia pseudocracca*, but specimens grown from these seeds are *Vicia atropurpurea*.

50323. VICIA SEPIUM L.

A perennial European vetch with climbing, rarely prostrate stems, up to a meter long, terminating in almost threadlike reddish tendrils. The leaflets are oval to elongate, and the flowers, in clusters of two to five, are dark lilac

50315 to 50324—Continued.

colored, more rarely yellowish white or pure white. The black narrow pods are about an inch long. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, pt. 2, p. 953.)

For previous introduction, see S. P. I. No. 32204.

50324. VICIA SYLVATICA L.

A perennial weak-stemmed vetch from northern and eastern Europe, sometimes over 5 feet high, with mucronate narrow leaflets, whitish flowers with lilac-colored stripes, and elongate, pendent black pods about an inch long. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, pt. 2, p. 925.)

For previous introduction, see S. P. I. No. 31085.

50325. MIDA ACUMINATA (R. Br.) Kuntze. Santalaceæ. Quandong.
(*Fusanus acuminatus* R. Br.)

From Sydney, New South Wales. Seeds presented by the Forestry Commission. Received May 6, 1920.

For previous introduction, see S. P. I. No. 49893.

50326. CITRUS NOBILIS DELICIOSA (Ten.) Swingle. Rutaceæ.
Tangerine.

From Jhelam, Punjab, India. Budwood presented by Mrs. Ralph R. Stewart. Received May 7, 1920.

"(Jhelam, Punjab. March 11, 1920.) *Naranji tangerine*." (Stewart.)

For previous introduction, see S. P. I. No. 45933.

50327. AMORPHOPHALLUS sp. Araceæ.

From Singapore, Straits Settlements. Tuber presented by I. Henry Burkill, director, Botanic Gardens. Received May 7, 1920.

"A tuber of a species of *Amorphophallus* from the Waterfall Garden in Penang. It came from the Kedah Peak, where *Amorphophallus prainii* may well occur." (Burkill.)

50328 to 50331.

From Pancajche, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received May 7, 1920. Quoted notes by Mr. Johnson.

"These blackberries were collected at Tactic, Alta Vera Paz, at altitudes of 5,000 to 6,000 feet."

50328. RUBUS sp. Rosaceæ.**Blackberry.**

"(No. 1. April 13, 1920.) A remarkably fruitful blackberry of vigorous growth, with canes up to an inch in diameter and sharp, hooked spines which are not very numerous. The fruits, which are borne in big terminal clusters of 15 to 35 berries, are of good flavor and rather long. The seeds are not objectionable, as in so many cultivated varieties. These seeds are all from one plant."

50329. RUBUS sp. Rosaceæ.**Blackberry.**

"(No. 2. April 13, 1920.) A vigorous vine; the canes are covered with glandular hairs. It is a medium bearer, with good-sized fruits."

50328 to 50331—Continued.

50330. *RUBUS* sp. Rosaceæ.

Blackberry.

"(No. 3. April 13, 1920.) Seeds from many vines of one species. The vines are vigorous and upright, producing canes more than 10 feet high, with few spines. The fruits are of good size and flavor, and the vines are good bearers."

50331. *SALVIA* sp. Menthaceæ.

Sage.

"(No. 5. Tactic. April 13, 1920.) A perennial *Salvia*, rather frequent in the underbrush on the mountain sides above Tactic at altitudes of 5,000 to 6,000 feet. It is soft wooded, producing pendent stems 3 to 5 feet long. The flowers, which are borne in terminal spikes up to a foot long, are bright red, tubular without a widely flaring mouth, and five-eighths of an inch long. The foliage is similar to that of *Salvia splendens*."

50332. *GREVILLEA BANKSII* R. Br. Proteaceæ.

From Littleriver, Fla. Seeds presented by Charles T. Simpson. Received May 11, 1920.

"These seeds of *Grevillea banksii*, a native of Australia, are from a tree on my grounds. It is one of our best ornamentals, being a rapid, upright grower, with elegant pinnatifid leaves with greenish silvery undersurfaces. It begins to bloom in December and continues in flower until in May, being covered with heads of curious carmine flowers, which are decidedly attractive. The tree is perfectly hardy here and would probably be so for some distance farther north, and so far it is entirely free from insect pests or diseases. It will grow in hammock or pineland with little culture or fertilizer." (Simpson.)

For previous introduction, see S. P. I. No. 40042.

50333. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ.

Gourd.

From Avery Island, La. Seeds presented by E. A. McIlhenny. Received May 13, 1920.

"I am sending you a few of the edible gourd seeds. A glance at them will show that they are different from the snake gourd of India. This gourd is thoroughly edible when 3 feet in length if grown under favorable conditions and is then without husk and tender from skin to skin." (McIlhenny.)

50334. *THEMEDA QUADRIVALVIS* (L.) Kuntze. Poaceæ.

Grass.

(*Anthistiria ciliata* L. f.)

From Hobart, Tasmania. Seeds presented by L. A. Evans, acting director of Agriculture. Received May 13, 1920.

"A coarse, rather tough annual grass which grows in tufts from 1 to 3 feet in height. It is closely related to the kangaroo grass of Australia and Tasmania." (C. V. Piper.)

For previous introduction, see S. P. I. No. 48487.

50335. *PASPALUM DILATATUM* Poir. Poaceæ.

Grass.

From Sydney, New South Wales. Seeds presented by W. Plant & Co. Received May 14, 1920.

"This grass is a smooth perennial with a deep, strong, root system and grows in clumps 2 to 4 feet high. It is a native of South America and perhaps also of the Gulf States in this country. In Australia this grass has proved to be valuable, especially on the northern coast of New South Wales. It is said to remain green when all other grasses have dried up. Owing to its tendency to lodge, it is better adapted for pasture than for hay. The seed is usually of low percentage of germination." (C. V. Piper.)

For previous introduction, see S. P. I. No. 35068.

50336 to 50339.

From Darjiling, India. Seed presented by Lieut. Col. A. T. Gage, through the Lloyd Botanic Garden. Received May 17, 1920, for work on leaf rusts conducted by the Office of Cereal Investigations.

50336. CLEMATIS GOURIANA Roxb. Ranunculaceæ.

An extensive climber, with shining leaves pubescent beneath and yellowish or greenish white flowers in dense panicles. Native to the western Himalayas up to 3,000 feet; also to Ceylon and the Eastern Peninsula. (Adapted from *Hooker, Flora of British India, vol. 1, p. 4.*)

For previous introduction, see S. P. I. No. 47659.

50337. CLEMATIS MONTANA Buch.-Ham. Ranunculaceæ.

A vigorous white-flowered climber, valuable for covering verandas. Native to the Himalayas.

For previous introduction, see S. P. I. No. 39007.

50338. THALICTRUM CHELIDONII DC. Ranunculaceæ.

A very beautiful ornamental plant, 15 inches high, with lovely pale-green foliage pubescent beneath. The delicate, silvery lavender flowers, over an inch across, are borne in graceful sprays. (Adapted from *The Garden, vol. 82, p. 289.*)

50339. THALICTRUM ELEGANS Wall. Ranunculaceæ.

An erect perennial herb with panicles of green-purple flowers. Native to the subalpine Himalayas from Hazara to Sikkim at altitudes of 10,000 to 13,000 feet. (Adapted from *Hooker, Flora of British India, vol. 1, p. 10.*)

50340 to 50342.

From Brisbane, Queensland. Seeds presented by C. T. White, Government botanist. Received May 20, 1920.

50340. ASTREBLA PECTINATA CURVIFOLIA Turner. Poaceæ. Grass.

"Curly Mitchell grass." (White.)

One of the best pasture grasses of Queensland, forming erect tufts 1 to 2 feet high, with narrow, much-curved leaves and woolly spikelets. Seeds of this grass furnished the Queensland aborigines with a large proportion of their food. (Adapted from *Bailey, Queensland Flora, pt. 6, p. 1897.*)

50341. ASTREBLA TRITICOIDES (Lindl.) F. Muell. Poaceæ. Grass.

A strong-growing somewhat wiry perennial grass that grows on stiff clayey soil. Its flowering spikes, resembling heads of wheat, are said to have highly fattening qualities and are readily eaten by stock. Native to South Australia, New South Wales, and Queensland. (Adapted from *Maiden, Useful Native Plants of Australia, p. 78.*)

For previous introduction, see S. P. I. No. 48977.

50342. PANICUM DECOMPOSITUM R. Br. Poaceæ. Grass.

A spreading glabrous grass, 2 to 3 feet high, common in Queensland. The pounded grains are said to yield a good food, although the grains are rather small. It is excellent for fodder.

For previous introduction, see S. P. I. No. 45040.

50343. ZIZIPHUS SPINA-CHRISTI (L.) Willd. Rhamnaceæ.

From Algiers, Algeria. Seed presented by Dr. L. Trabut. Received May 21, 1920.

A large tree, cultivated as an ornamental in the oases and gardens of the Sudan, with bright-green leaves somewhat fleshy and cordate and ovoid, fragrant, red-brown fruit. The red wood is used by the natives for coarse carpentry. (Adapted from *Bulletin de la Société de Horticulteré de Tunis*, vol. 17, p. 125.)

For previous introduction, see S. P. I. No. 44361.

50344. VACCINIUM VITIS-IDAEA L. Vacciniaceæ. Red bilberry.

From Stockholm, Sweden. Fruits presented by Dominic I. Murphy, American consul general. Received May 14, 1920.

A small bush, seldom more than 7 or 8 inches in height, which grows wild in northern Europe. The leaves are evergreen, and the blossoms are white or pink. The deep-red berries have a tart, sour taste and are a reasonable substitute for cranberries. The shrub grows best upon the heathery moors, in light forest growths, and on the lower hills of the mountainous districts. (Adapted from *Commerce Reports*, November 23, 1910.)

A form, *Vaccinium vitis-idaea* var. *minor*, of this plant grows in the extreme north-eastern United States and in Canada; it is here known as the mountain or rock cranberry.

50345. ANDROPOGON sp. Poaceæ.

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderyst. Received July 29, 1920.

50346. ALLIUM CEPA L. Liliaceæ. Onion.

From Valencia, Spain. Seeds presented by John R. Putnam, American consul. Received May 22, 1920.

For use in horticultural and pomological investigations.

50347 and 50348.

From Kulare, via Cairns, Queensland, Australia. Seeds presented by J. A. Hamilton. Received May 4, 1920.

50347. EUCALYPTUS TERETICORNIS J. E. Smith. Myrtaceæ.

This tree is usually not more than 100 feet high in Australia. It grows best near the coast, but endures the dry heat of the interior valleys. The trees of this species furnish an excellent red timber which is very hard and durable. (Adapted from *McClatchie, Eucalypts Cultivated in the United States*, Bulletin 35, U. S. Bureau of Forestry, p. 81.)

For previous introduction, see S. P. I. No. 38728.

50348. PHASEOLUS AUREUS Roxb. Fabaceæ. Mung bean.

According to Mr. Hamilton these beans are there known as "green soy beans."

50349 to 50351. AVENA SATIVA L. Poaceæ. Oats.

From Bremen, Germany. Presented by Prof. S. Tacke, director, Moor-Versuchs-Station. Received May 18 and 20, 1920. Quoted notes by Professor Tacke.

50349. "Bright-yellow oats."

50351. "Golden yellow oats."

50350. "Black-speckled oats."

50352. CREPIS BREVIFLORA Delile. Cichoriaceæ.

From Cairo, Egypt. Seeds presented by Thomas W. Brown, director, Horticultural Section, Gizeh Branch, Ministry of Agriculture. Received May 21, 1920.

An Egyptian annual, 50 centimeters to 1 meter high, with a slender, zigzag, dichotomous, corymbose stem. The lower leaves are ovate-oblong, and the stem leaves are linear-lanceolate with sagittate bases. The heads of yellow flowers are very small. (Adapted from *Muschler, Manual Flora of Egypt, p. 1067.*)

This genus forms an unusually promising subject for genetic research, and these seeds were introduced for purposes of comparison and experimental breeding at the University of California Agricultural Experiment Station.

50353. ALEURITES MONTANA (Lour.) Wilson. Euphorbiaceæ.

Mu-oil tree.

From Port Louis, Mauritius. Seeds presented by G. Regnard. Received June 8, 1920.

The *mu-yu shu* [mu-oil or wood-oil tree], an ornamental tree cultivated for its oil in subtropical southeastern China. In spring it is a beautiful sight, resembling a plum tree in full flower. The flowers are white with pink and yellow markings. The deciduous leaves are broadly ovate and heart shaped at the base. The fruit is egg shaped, 5 to 6 centimeters (about 2 inches) long, with three longitudinal and many transverse much-raised ridges; the interior part of the fruit is thick and woody and is not easily rotted by fermentation. It incloses usually three obovoid seeds each about 3 centimeters long, warty outside. When ripe, the fruit opens from the base upwards into three parts, and the seeds can then be readily extracted and crushed for oil. This oil is largely used in the paint and varnish industries. (Adapted from *Bulletin of the Imperial Institute, vol. 11, p. 441*, and *Agricultural Gazette of New South Wales, vol. 29, p. 437.*)

For previous introduction, see S. P. I. No. 36897.

50354 to 50356.

From the island of Guam. Seed presented by Glen Briggs, agronomist, Guam Agricultural Experiment Station, through Prof. C. V. Piper. Received May 6, 1920.

50354. ALYSICARPUS VAGINALIS (L.) DC. Fabaceæ.

"This is probably the same as S. P. I. No. 26786. It proved to be the most promising species of *Alysicarpus* of all those in our trials and for a time promised to be an exceedingly valuable introduction. For some reason not clear the plant failed after the first year or two, but its general character is such that it is worthy of extensive testing to ascertain if possible the exact conditions which it requires." (*Piper.*)

For previous introduction, see S. P. I. No. 26786.

50355. CHRYSOPOGON ACICULATUS (Retz.) Trin. Poaceæ. Lovi-lovi grass.

"This grass is abundant in the Indo-Malay region. At Hongkong it is used extensively for lawns. In the Philippines and India it furnishes a good deal of native pasturage, but is objectionable from the fact that when it is allowed to fruit the fruits are sharp pointed, like needles, and so cause some injury to the animals. Besides, they are a nuisance in sticking in the clothing. We have experimented with it somewhat in Florida, where it succeeds well enough, but thus far it has not proved to be aggressive." (*Piper.*)

For previous introduction, see S. P. I. No. 37567.

50354 to 50356—Continued.

50356. *TERAMNUS LABIALIS* (L.) Spreng. Fabaceæ.

"This is a slender leguminous vine abundant both in the West Indies and East Indies, of possible value as a cover crop in orchards. Recent investigations have shown pretty clearly that the East Indian and West Indian species are distinct, a matter upon which I understand E. D. Merrill expects to publish. If this conclusion is valid, the oriental species will be *Teramnus uncinatus*, while the West Indian species will remain *T. labialis*." (Piper.)

For previous introductions, see S. P. I. No. 30716.

50357. *SOLANUM TUBEROSUM* L. Solanaceæ.

Potato.

From San Jose, Costa Rica. Tubers presented by Benjamin F. Chase, American consul. Received May 1, 1920.

"*Papa amarilla*, Italian potato, with yellow flesh." (Chase.)

50358. *ZEA MAYS* L. Poaceæ.

Corn.

From Honolulu, Hawaii. Seed presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received May 26, 1920.

"Guam seed corn." (Westgate.)

50359 to 50373.

From Darjiling, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received May 20, 1920.

50359. *ACER CAMPBELLII* Hook. f. and Thoms. Aceraceæ.

Maple.

The chief maple of the northeastern Himalayas up to 7,000 feet. A large tree, freely reproduced by seed or coppice, with pale close-grained wood which is particularly valuable for planking. (Adapted from Mueller, *Useful Native Plants of Australia*, p. 14.)

For previous introduction, see S. P. I. No. 48024.

50360. *ACER LAEVIGATUM* Wall. Aceraceæ.

Maple.

A handsome maple from the northeastern Himalayas up to 7,000 feet, the wood of which is much used for building and for tea boxes. (Adapted from Mueller, *Useful Native Plants of Australia*, p. 14.)

For previous introduction, see S. P. I. No. 47631.

50361. *ACER THOMSONI* Miquel. Aceraceæ.

Maple.

A large, handsome tree with thin gray bark, native to the Sikkim Himalayas and Bhutan at altitudes of 7,000 to 9,000 feet. The leaves, $3\frac{1}{2}$ to 10 inches long and wide, are small lobed, and the fruits are 2 to 3 inches long. The soft wood is grayish white. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 695, and Gamble, *A Manual of Indian Timbers*, p. 99.)

50362. *ASTILBE RIVULARIS* Buch.-Ham. Saxifragaceæ.

A perennial herbaceous plant native to Nepal and the temperate regions of the Himalayas from Kashmir to Bhutan. This species has creeping rhizomes and large radical leaves which are biternately divided into dentate sections and have the leafstalks furnished with numerous tawny hairs. The flowering stems, which attain a height of nearly 5 feet, bear a few alternate leaves and terminate in a remarkably effective, slightly nodding panicle of numerous small flowers. The corolla is wanting and the lobes of the calyx, four or five in number, are yellowish white; the 8 to 10 stamens are pure white. (Adapted from *The Garden*, vol. 48, p. 355.)

For previous introduction, see S. P. I. No. 47643.

50359 to 50373—Continued.

- 50363. CRACCA CANDIDA** (DC.) Kuntze. Fabaceæ.
(*Tephrosia candida* DC.)

A shrub which attains a height of about 10 or 12 feet. It makes a great deal of soft growth and covers the ground well. This shrub has been very well reported on in the East and in various parts of the West Indies. A characteristic feature is its long taproot. (Adapted from *Proceedings of the Agricultural Society of Trinidad and Tobago*, vol. 12, p. 256.)

For previous introduction, see S. P. I. No. 47666.

- 50364. DOCYNIA INDICA** (Wall.) Decaisne. Malaceæ.

A small erect tree with yellowish bark and spreading branches. The sparse glabrous ovate leaves are 2 to 3 inches long. The white flowers, three or four in a single umbel, with hairy calyxes, are followed by smooth, roundish, greenish yellow fruits with orange-colored spots. The flavor of the fruit somewhat resembles that of the quince. (Adapted from *Wallich, Plantae Asiaticae Rariores*, vol. 2, p. 173.)

- 50365. ECHINOLAENA POLYSTACHYA** H. B. K. Poaceæ.

Grass.

A perennial grass with decumbent straggling stems branched below into leafy slender branches 4 to 18 inches long, native to the eastern Himalayas from Nepal to Sikkim at altitudes of 3,000 to 6,000 feet. The ovate-lanceolate flat, membranous leaves are 2 to 4 inches long. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 59.)

- 50366. FRAXINUS FLORIBUNDA** Wall. Oleaceæ.

Ash.

A large tree, leafless during part of winter, found locally in groups in shady parts of mixed forests in Afghanistan, Kandahar, and rarely in the Sikkim Himalayas to a height of 11,000 feet. The finest specimens in the northwestern Himalayas are those planted near villages and temples and on the Chenab, some of which are exceedingly handsome trees, 120 feet high with a thick-based tall, erect trunk. The cinereous bark is smooth, but with deep longitudinal cracks and transverse furrows. The wood is similar to that of the English ash, tough and hard and much valued for plows, and in Kashmir is reckoned the best wood for oars. (Adapted from *Brandis, Forest Flora of India*, p. 302.)

For previous introduction, see S. P. I. No. 47687.

- 50367. HYDRANGEA ROBUSTA** Hook. f. and Thoms. Hydrangeaceæ.

A very robust species with cordate leaves, deeply and closely toothed and fimbriated, and generally with winged petioles. The pedicels are red; the broadly ovate, white, sinuate, acutely toothed sepals are faintly veined with red-purple. The small perfect flowers have blue petals and stamens. (Adapted from *Curtis's Botanical Magazine*, pl. 5038.)

For previous introduction, see S. P. I. No. 47694.

- 50368. INDIGOFERA DOSUA** Buch.-Ham. Fabaceæ.

Indigo.

A low shrub with woody branches, clothed with a short gray or brownish pubescence. The leaves, 1 to 3 inches long, bear leaflets one-fourth to half an inch long, which are dull green above, glaucous below. The racemes of bright red flowers are 1 to 3 inches long with lanceolate-cuspidate silky bracts. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 102.)

For previous introduction, see S. P. I. No. 43776.

- 50369. INDIGOFERA DOSUA TOMENTOSA** Baker. Fabaceæ.

Indigo.

A shrub of the temperate central and eastern Himalayas at altitudes of 6,000 to 8,000 feet, with its branches clothed with silky pubescence. The leaves are 6 to 9 inches long, composed of 41 to 51 leaflets 1 inch long. The racemes are

50359 to 50373—Continued.

over 3 inches long; the bracts are densely brown velvety, with a very long rigid point. The flowers are said to be eaten in Kangra as a potherb. This shrub is prized as a fodder for sheep and goats. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 102, and *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 385.)

50370. PHOTINIA sp. Malaceæ.

Received as *Photinia integrifolia*, but the seeds do not agree with a previous sample from the same source.

50371. PUERARIA PEDUNCULARIS (Benth.) R. Grah. Fabaceæ.

A copiously twining plant with slender branches clothed with short deflexed deciduous hairs. The membranous green leaflets are gray with a thick down. The reddish flowers with a deep purple tipped keel are in moderately close racemes 6 inches to 1 foot in length. Native to the temperate regions of the eastern Himalayas, Khasi Hills, Nepal, Sikkim, and Mishmi, at altitudes of 5,000 to 9,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 197.)

50372. THEMEDA GIGANTEA VILLOSA (Poir.) Hack. Poaceæ. Grass.

A stout grass 8 to 16 feet high, with glabrous or scaberulous branches and branchlets, linear leaves 4 to 8 feet long, and a large decompound panicle. Native to Assam, the Khasi Hills, Java, and Malacca. (Adapted from *Hooker, Flora of British India*, vol. 7, p. 217.)

50373. TRACHYCARPUS MARTIANUS (Wall.) Wendl. Phœnicaceæ. Palm

A tall, slender tree, 40 to 50 feet high, stunted on dry ground or in otherwise unfavorable localities, with a globose crown of dark shining leaves. The trunk below the crown is clothed with a network of brown fibrous rhomboid meshes formed by the sheathing bases of the 3-foot petioles. The blade is roundish, consisting of 30 to 40 linear segments, 15 to 20 inches long, joined for half their length, emarginate at the top. The drooping compound panicle bears only one berry, which is oblong, yellow at first, dark glossy blue when ripe. The fruit is eaten, though the pulp is scanty and almost tasteless. (Adapted from *Brandis, Forest Flora of India*, p. 546.)

For previous introduction, see S. P. I. No. 48281.

50374 and 50375. SACCHARUM OFFICINARUM L. Poaceæ.**Sugar cane.**

From Coimbatore, South India. Cuttings presented by T. S. Venkatraman, Agricultural College. Received May 27, 1920.

"Indigenous Indian canes of the type of the Japanese forage cane which seems to be immune to the mosaic disease, which apparently attacks more or less severely all other sugar-cane types." (C. O. Townsend.)

50374. "Shamsara. A hardier variety than the following one, chiefly grown in North India, green when young, turning greenish brown at maturity. It yields in northern India 15 to 20 tons in cane, with 16 to 17 per cent sucrose in the juice, and a purity ranging from 80 to 85 per cent. It matures in 10 months. Probably an introduction into this country." (Venkatraman.)

50375. "Vellai. A thick, juicy cane of South India, green or greenish yellow when young, turning golden yellow at maturity. It yields 20 to 25 tons in cane, with 17 to 18 per cent sucrose in the juice, and a purity ranging from 85 to 90 per cent. It requires 12 to 14 months to mature, is rather delicate, requires careful cultivation, and can not stand water-logging. Not an indigenous cane, but apparently introduced into this country about a century ago." (Venkatraman.)

50376 and 50377.

From Gatun, Canal Zone. Seeds presented by Sergt. G. E. Hardwick, Quartermaster Corps. Received May 10, 1920.

50376. CARICA PAPAYA L. Papayaceæ.

Papaya

"A very large papaya, which, however, is not sweet. I have never seen one as large in Cuba or the neighboring islands." (*Hardwick.*)

50377. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.

Yard-Long bean

"One pod was $37\frac{1}{2}$ inches long." (*Hardwick.*)

50378. HOLCUS SORGHUM L. Poaceæ.

Sorghum

(*Sorghum vulgare* Pers.)

From Teheran, Persia. Plant material presented by Amir Aalam, Minister of Agriculture, Commerce, and Public Works, who obtained it from Amid-ol-Molk Government agricultural representative in Mazenderan. Received May 22, 1920. Quoted notes by Amid-ol-Molk.

"Seed of *Tani* sugar cane (*nei shakar tani*). The stalk is not higher than 4 feet. This cane is very delicate and can not stand drought. In case no rain falls within one month after the cuttings are planted, they must be irrigated to prevent their spoiling by drying out. The sugar from this sorghum is sweeter than that from the Indian sugar cane (*nei shakar hendi*). A sort of candy is made out of the juice. Red sugar (*shakar ghermez*), which is quite well known in Persia, is extracted from this cane. It is quite evident, however, that if the juice is perfectly purified it will turn white and crystallize."

50379. CASIMIROA EDULIS La Llave. Rutaceæ. White sapote

Plants grown at the Miami Plant-Introduction Garden from seeds presented by F. O. Popenoe, West India Gardens, Altadena, Calif. Numbered June 8, 1919.

"Seeds from a tree at Sierra Madre. This is a fairly large fruited form and a heavy bearer." (*F. O. Popenoe.*)

50380 and 50381.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received May 26, 1920.

50380. GARCINIA sp. Clusiaceæ.

[Apparently sent by mistake, as the label is *Zalacca*, which is a palm.]

50381. PROSOPIS VIDALIANA Naves. Mimosaceæ.

Aroma

"A tall, spiny shrub of rapid growth, with long, arching branches, found growing on the beach. The plant grows luxuriantly on poor, sandy land and of fair value as a sand binder. Properly trimmed it is an attractive ornamental shrub that should be of value in extreme southern Florida. If sufficiently hardy it would make a pretty good 'live' fence." (*Wester.*)

For previous introduction, see S. P. I. No. 42807.

50382 to 50387.

From Foochow, Fukien, China. Seeds collected by C. R. Kellogg. Received May 27, 1920. Quoted notes by Mr. Kellogg.

50382. ARACHIS HYPOGAEA L. Fabaceæ.

Peanut

"Sixty-day peanuts from Kuliang."

50383. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ.

Sword bean

"Knife bean, with a pod 12 inches long."

50382 to 50387—Continued.

50384. PHASEOLUS AUREUS Roxb. Fabaceæ.

Mung bean.

"Small green pea from Futsing."

50385. SOJA MAX (L.) Piper. Fabaceæ.

Soy bean.

(Glycine hispida Maxim.)

"Yellow bean from Hokchiang (Futsing)."

50386. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.

Yard-Long bean.

"Black bean from Futsing."

50387. VIGNA SINENSIS (Torner) Savi. Fabaceæ.

Cowpea.

"Red bean from Futsing."

50388. MANIHOT ESCULENTA Crantz. Euphorbiaceæ.

Cassava.

(M. utilisissima Pohl.)

From Bahia, Brazil. Cuttings presented by Dr. V. A. Argollo Ferrão. Received May 27, 1920.

"A very curious and interesting variety from the highlands of the interior. It is called *manioc* of 10 years, because it may remain 10 years in the ground and produce roots that weigh more than 500 kilograms (1,102.3 pounds) on one tree, if they are planted from 10 to 12 meters apart. The roots are very long. It is interesting for countries where there is no frost and where droughts may occur from time to time." (Argollo Ferrão.)

50389. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Santiago de las Vegas, Cuba. Cuttings presented by Dr. Mario Calvino, director, Agricultural Experiment Station. Received May 29, 1920.

The *Cristalina* variety of sugar cane for trial in connection with the sugar-cane work of the United States Department of Agriculture.

50390. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Rio Piedras, Porto Rico. Cuttings presented by Prof. F. S. Earle, Insular Experiment Station. Received May 24, 1920.

"Karangire seed cane grown from that received from Argentina last summer." (Earle.)

50391 to 50394.

From Montevideo, Uruguay. Seeds presented by Luis Guillot, Dirección General de Paseos Públicos. Received May 19, 1920.

50391. CLEMATIS MONTEVIDENSIS Spreng. Ranunculaceæ.

Clematis.

A very attractive clematis found in thickets in various parts of Uruguay, especially near the town of Salto, where it climbs trees and shrubs. The large whitish yellow flowers are about 2 centimeters (four-fifths of an inch) in diameter and are borne in axillary and terminal clusters. The ashy green leaves are either entire or more or less three lobed. (Adapted from *Arechavaleta, Flora Uruguayana*, vol. 1, p. 24.)

50392. EUGENIA GLAUDESCENS Cambess. Myrtaceæ.

A large shrub, native to southern Brazil, with rather short, lanceolate leaves up to 2½ inches in length and small white flowers borne singly in the axils of the leaves. (Adapted from *St. Hilaire, Flora Brasiliæ Meridionalis*, vol. 2, p. 368.)

50391 to 50394—Continued.

50393. *EUPATORIUM OBLONGIFOLIUM* (Spreng.) Baker. Asteraceæ.

A tall, smooth, somewhat shrubby composite, native to southern Brazil and Uruguay, where it is called *yerba lagarto*. The unbranched stems, which are almost free of leaves in the upper part, become 2 feet or more high and bear a terminal corymb of red flowers. (Adapted from *Arechavaleta, Flora Uruguaya* vol. 3, p. 161.)

50394. *MIKANIA AMARA* (Vahl) Willd. Asteraceæ.

A shrubby climber, found in woods along rivers in Uruguay, where it is called *guaco*. It has oblong, coriaceous leaves and clusters of whitish flowers. (Adapted from *Arechavaleta, Flora Uruguaya*, vol. 8, p. 171.)

50395 to 50398.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, in charge, department of botany and forestry, Hawaiian Sugar-Planters' Experiment Station. Received May 24, 1920.

50395. *ALTINGIA EXCELSA* Noronha. Hamamelidaceæ.

A lofty deciduous tree native to Assam and Tenasserim, with smooth, light gray bark peeling off in large thin flakes. The soft wood, reddish gray with lighter streaks, is used in Assam for building and ordinary domestic purposes. (Adapted from *Gamble, Manual of Indian Timbers*, p. 175.)

50396. *FICUS INVOLUCRATA* Blume. Moraceæ.

A tree with oval, obtuse, smooth, parchmentlike leaves 5 to 7 inches long on petioles 1 to 1½ inches long and subglobose fruits. (Adapted from *Blume, Bijdragen tot de Flora van Nederlandsch Indië*, p. 447.)

50397. *FICUS RIBES* Reinw. Moraceæ.

A small tree with membranous lanceolate leaves 2 to 5 inches long. The receptacles rise from elongated leafless branches which issue from the stem near the ground. The male-flower perianth consists of two large inflated roundish pieces. The gall flowers have a broad ovary and no perianth. The fertile female flowers are on separate receptacles, the tubular perianth covering only the pedicel of the achene. A good tonic is made from the bark which, like the seeds and fruit, is possessed of valuable emetic properties. (Adapted from *Kirtikar, Indian Medicinal Plants*, vol. 2, p. 1199.)

50398. *FICUS VARIEGATA* Blume. Moraceæ.

A tall spreading tree with pale bark and cordate leaves 4 to 7 inches long, glabrous above. The receptacles, clustered on tubercles of the trunk and branches, are smooth, globose, 1 inch in diameter, and red when ripe, with white streaks and dots. Native to Chittagong, Assam, and Penang. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 535.)

50399 to 50402.

From Ventimiglia, Italy. Seeds presented by Joseph Benbow, superintendent, La Mortola. Received May 24, 1920.

50399. *DODONAEA THUNBERGIANA* Eckl. and Zeyh. Sapindaceæ.

Zand Olyf. A resinous shrub native to South Africa, with viscid shining coriaceous leaves and short racemes or panicles of greenish flowers. It is frequent on the hillocks from the Fish River westward and on the mountains in the southwest and west. A decoction of the root is used as a slight purgative in cases of fever. (Adapted from *Sim, The Forests and Forest Flora of Cap Colony*, p. 173, pl. 26.)

For previous introduction, see S. P. I. No. 44536.

50399 to 50402—Continued.

50400. *DODONÆA TRIQUETRA* Wendl. Sapindaceæ.

A tall, erect, glabrous shrub from Australia, with oval-elliptic leaves 2 to 4 inches long and very smooth shining-brown seeds in medium-sized capsules. The wood is light colored and close grained. (Adapted from *Maiden, Useful Native Plants of Australia*, p. 417, and *Bentham, Flora Australiensis*, vol. 1, p. 474.)

For previous introduction, see S. P. I. No. 10493.

50401. *RUBUS ULMIFOLIUS* Schott. Rosaceæ.

Bramble.

A vigorous European shrub with more or less plum-colored arching stems clothed with starry down and armed with long, broad-based prickles. The leaves are slightly downy above and white felted beneath. The showy cylindrical panicles of bright rosy red flowers are followed by small dryish fruits. Several ornamental garden varieties have been obtained from this species.

For previous introduction, see S. P. I. No. 40787.

50402. *SMILAX ASPERA* L. Smilacaceæ.

Smilax.

A graceful climber native to the Mediterranean basin. It climbs mainly by the aid of stem prickles, but the backs and edges of the leaves are also prickly, helping to sustain the plant as it scrambles over rocks and bushy growths. The form of the leaf, though usually that of a broad lance head with distinct shoulders, is extremely variable both in size and shape; it is sometimes like a wild ivy or *Convolvulus* leaf. The leaves are sometimes spotted with dull white markings. This pretty plant bears axillary spikes of small, fragrant whitish flowers which are followed by red currantlike fruits. Its near relative [*Smilax officinalis*] of the tropical regions of Central America and the West Indies yields the sarsaparilla of medicine. (Adapted from *The Garden*, vol. 62, p. 397.)

50403 to 50435.

From Jamaica Plain, Mass. Seeds presented by Prof. C. S. Sargent, Arnold Arboretum. Received May 25, 1920.

"Collected in northern Honan by Joseph Hers." (*Sargent*.)

50403. *ACTINIDIA PURPUREA* Rehder. Dilleniaceæ.

"(No. 1265.)"

50404. *BERBERIS POIRETI* C. Schneid. Berberidaceæ.

Barberry.

"(No. 982.)"

50405. *BERBERIS* sp. Berberidaceæ.

Barberry.

"(No. 1160.)"

50406. *CELASTRUS LOESENERI* Rehd. and Wils. Celastraceæ.

"(No. 828.)"

50407. *CELASTRUS* sp. Celastraceæ.

"(No. 1287.)"

50408. *CELTIS KORAIENSIS* Nakai. Ulmaceæ.

Hackberry.

"(No. 1071.)"

50409. *CORNUS* sp. Cornaceæ.

"(No. 70.)"

50410. *CORNUS WALTERI* Wangerin. Cornaceæ.

"(No. 946.)"

50403 to 50435—Continued.

50411. *CORNUS POLIOPHYLLA* Schneid. and Wang. Cornaceæ.

"(No. 1308.)"

50412. *COTONEASTER ZABELI* C. Schneid. Malaceæ.

"(No. 1194.)"

50413. *COTONEASTER ZABELI* C. Schneid. Malaceæ.

"(No. 1379.)"

50414. *CRATAEGUS* sp. Malaceæ.

Hawthorn.

"(No. 942.)"

50415. *CRATAEGUS* sp. Malaceæ.

Hawthorn.

"(No. 1332.)"

50416. *DALBERGIA HUPEANA* Hance. Fabaceæ.

"(No. 1359.)"

50417. *EUONYMUS* sp. Celastraceæ.

[No number.]

50418. *EUONYMUS GIRALDII* Loes. Celastraceæ.

"(No. 1145.)"

50419. *GREWIA PARVIFLORA* Bunge. Tiliaceæ.

"(No. 1358.)"

50420. *ILEX* sp. Aquifoliaceæ.

"(No. 1201.)"

50421. *LONICERA* sp. Caprifoliaceæ.

Honeysuckle.

"(No. 1358.)"

50422. *MALUS* sp. Malaceæ.

"(No. 912.)"

50423. *MALUS THEIFERA* Rehder. Malaceæ.

"(No. 1115.)"

50424. *RHAMNUS* sp. Rhamnaceæ.

"(No. 1155.)"

50425. *RHAMNUS* sp. Rhamnaceæ.

[No number.]

50426. *RHAMNUS* sp. Rhamnaceæ.

"Small-leaved."

50427. *ROSA BANKSIOPSIS* Baker. Rosaceæ.

Rose.

"(No. 896.)"

50428. *ROSA* sp. Rosaceæ.

Rose.

[No number.]

50429. *SMILAX DISCOTIS CONCOLOR* Norton. Smilacaceæ.

Smilax.

"(No. 1212.)"

50430. *SMILAX* sp. Smilacaceæ.

Smilax.

[No number.]

50431. *MALUS THEIFERA* Rehder. Malaceæ.

"(No. 1161.)"

50432. *TILIA* sp. Tiliaceæ.

Linden.

"(No. 1068.)"

50403 to 50435—Continued.

50433. *VIBURNUM* sp. Caprifoliaceæ.

“(No. 1162.)”

50434. *VIBURNUM SHENSIANUM* Maxim. Caprifoliaceæ.

“(No. 1326.)”

50435. *RHAMNUS* sp. Rhamnaceæ.“(No. 1368.)” Received as *Ilex* sp.

50436 to 50441.

From Foochow, Fukien, China. Seeds collected by C. H. Riggs at Shaowu Agricultural Experiment Station, Shaowu, Fukien; presented through C. R. Kellogg. Quoted notes by Mr. Riggs. Received May 26, 1920.

50436. *CACARA EROSA* (L.) Kuntze. Fabaceæ.

Yam bean.

(*Pachyrhizus angulatus* Rich.)“*De kua* (earth melon). A field crop in any soil; sandy soil is preferred.”

For previous introduction, see S. P. I. No. 47146.

50437. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ.

Watermelon.

“*Beh je kua siou* (small white ‘only’ watermelon). A small white watermelon raised for the seed only, hence called ‘only melon.’ Flavor poor to medium. Vines short and quite prolific; will yield 10 to 15 bushels of seed per acre.”

50438. *FAGOPYRUM VULGARE* Hill. Polygonaceæ.

Buckwheat.

(*F. esculentum* Moench.)“*Kiau ma* (buckwheat). Only type of buckwheat known here.”50439. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

“*Moi* (sesame). A very common field crop here. Usually planted in gardens or on land not adapted to rice. Best in medium clay loam.”

50440 and 50441. *SOJA MAX* (L.) Piper. Fabaceæ.

Soy bean.

(*Glycine hispida* Maxim.)

50440. “*Deu tz* (bean). The only yellow soy bean known here and the one referred to when beans are spoken of unless some other variety is definitely mentioned. A field crop; clay preferred. Usually planted right after rice is reaped, making a rotation of rice in the spring and beans in the fall.”

50441. “*U deu* (black bean). The only other type of soy bean grown here. Rather heavier yielder and more vine than the yellow, but not grown very much. A field crop preferring medium-heavy clay soil. Collected at the farm of Lee U. Ken.”

50442 to 50465.

From Peking, Chihli, China. Seed presented by N. H. Cowdry, Department of Anatomy, Peking Union Medical College. Received May 26, 1920. Quoted notes by Mr. Cowdry.

50442. *APIUM GRAVEOLENS* L. Apiaceæ.

Celery.

“Celery seed.”

50443. *BETA VULGARIS* L. Chenopodiaceæ.

Beet.

“Beet seed.”

50442 to 50465—Continued.

50444 to 50449. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Pai ts'ai.**

50444. "Oil cabbage seed." 50446. "Flat cabbage seed."

50445. "Red cabbage seed." 50447. "Blue cabbage seed."

50448. "Ordinary Chinese cabbage seed."

50449. "Cabbage seed."

50450. *BRASSICA RAPA* L. Brassicaceæ. **Turnip.**

"Turnip seed."

50451. *CHRYSANTHEMUM CORONARIUM* L. Asteraceæ.Sent in as *Sagittaria* seed.50452. *CORIANDRUM SATIVUM* L. Apiaceæ. **Coriander.**

For previous introduction, see S. P. I. No. 26448.

50453. *FOENICULUM VULGARE* Hill. Apiaceæ. **Fennel.**

For previous introduction, see S. P. I. No. 35634.

50454. *GYMNOCLADUS CHINENSIS* Baill. Cæsalpiniaceæ.

"Large black seed."

50455. *LACTUCA SATIVA* L. Cichoriaceæ. **Lettuce.**

For previous introduction, see S. P. I. No. 47148.

50456. *PERILLA FRUTESCENS* (L.) Britton. Menthaceæ. **Perilla.**

For previous introduction, see S. P. I. No. 45265.

50457. *PISUM SATIVUM* L. Fabaceæ. **Garden pea.**

For previous introduction, see S. P. I. No. 48783.

50458 to 50465. *RAPHANUS SATIVUS* L. Brassicaceæ. **Radish.**

50458. "Big red radish." 50460. "Radish seed."

50459. "Red radish." 50461. "Green radish."

50462. "Green radish with red interior."

50463. "Red radish."

50464. "Large red radish."

50465. "Green radish."

50466 to 50517.

From Para, Brazil. Presented by Sr. André Goeldi, Museu Goeldi. Received June 1, 1920. Quoted notes by Sr. Goeldi.

50466. *ACHRAS ZAPOTA* L. Sapotaceæ. **Sapodilla.**

Plants of the best of the sapotaceous fruits. It is common in many parts of tropical America and is cultivated successfully in southern Florida, where it merits commercial exploitation.

For previous introduction, see S. P. I. No. 48596.

50467. *ACROCOMIA SCLEROCARPA* Mart. Phœnicaceæ. **Macaúba palm.**

Seeds of the *gru-gru* nut which is widely distributed throughout Trinidad, but not in sufficient abundance for the development of an export trade. It is used locally as a roasted nut. The kernels contain 57 per cent of fat which is in a yellowish white crystalline form. (Adapted from *The Monthly Bulletin of Agricultural Intelligence and Plant Disease*, vol. 5, p. 75.)

For previous introduction, see S. P. I. No. 37382.

50466 to 50517—Continued.

50468. *ASTROCARYUM JAUARI* Mart. Phœnicaceæ. Palm.

"Seed of a palm with large nuts."

A graceful palm of medium height, with pinnate spiny leaves. Native to tropical America.

50469. *CARYOCAR VILLOSUM* (Aubl.) Pers. Caryocaraceæ.

"Seeds of the piquiá tree, which furnishes a hard wood especially valuable for cart work. The pulp of the fruit is edible when the whole fruit has been cooked in salted water."

For previous introduction, see S. P. I. 31204.

50470. *CASSIA* sp. Cæsâlpiniaceæ.

"Plants."

50471. *CHRYSOPHYLLUM CAINITO* L. Sapotaceæ. Caimito.

"Plants of the caimito."

A tree 8 to 10 meters high, native to tropical America, highly esteemed there for its rose-fleshed fruit. The large, entire, elliptic leaves are glabrous above and golden tomentose beneath. The small white flowers are followed by round pale reddish yellow fruits the size of a large apple. It is a rival of the sapodilla (*Achras sapota*), which is often considered the best of tropical fruits. (Adapted from *L'Illustration Horticole*, vol. 32, p. 127.)

For previous introduction, see S. P. I. No. 46150.

50472. *CHRYSOPHYLLUM* sp. Sapotaceæ.

"Small seedlings from the Purus River."

50473. *CHRYSOPHYLLUM* sp. Sapotaceæ.

"Seed from the Purus River."

50474. *CISSUS* sp. Vitaceæ.

"Roots of a *Cissus* which I brought from the Purus River some years ago. The vine grows wild there in the forests. Except for the somewhat more rigid flesh, the fruits have more or less the taste of an Isabella wine grape."

50475. *COUROUPITA GUIANENSIS* Aubl. Myrtaceæ.

Plants of the cannon-ball tree, a native of British Guiana, and known there to the half-breed Spaniards as *Tapara da Suce*; the Caribs call it *Cokoi monoh* (probably a corruption of the Spanish *Coco de monos*, that is, "monkey coconut"). The tree is plentiful in the upper Cuyuni River region and grows to a very considerable size. The trunks are straight and clear of leaf branches nearly to the top, but from about 10 feet from the ground upward they bear many of the peculiar flower and fruit branches which are very persistent. A very characteristic feature of the cannon-ball tree is the uniform change of foliage three times a year. There is no variation of this change due to age, situation, or weather. The gradual shedding of the foliage takes three or four weeks, and at last every leaf has dropped and the trees stand bare; in a few hours, rarely more than a day, the new foliage bursts forth, and in a day or two, as if by magic, the trees are vested again in full dress. The flowering branches are 2 to 5 feet long, pendent and interlaced, persistent like the foliage branches. (Adapted from *The Journal of the Board of Agriculture of British Guiana*, vol. 12, p. 40.)

50476. *DRACONTIUM* sp. Araceæ.

"Plants of an interesting aroid which grows wild in the open savannas at Marajo Island. No use is made of it, but I once tasted the roots cooked and roasted like potatoes and found them not disagreeable. Perhaps it may be of use in the future."

50466 to 50517—Continued.

50477. *ECHINOCHLOA* sp. Poaceæ.

Grass.

"Plants."

50478. *ECHINOCHLOA* sp. Poaceæ.

Grass.

"Plants of No. 287."

50479. *ECHINOCHLOA* sp. Poaceæ.

Grass.

"Plants."

50480. *ELAEIS MELANOCOCCA* Gaertn. Phœnicaceæ.

Palm.

"Plants, originally from the Purus River."

A large, spreading, low palm which grows in low, moist land. It is closely related to the African oil palm (*Elaeis guineensis*), and a clear oil is extracted from the kernels in small quantities by the natives, who prize it highly for cooking.

For previous introduction, see S. P. I. No. 46048.

50481. *EUTERPE OLERACEA* Mart. Phœnicaceæ.

Palm.

"Seeds of the *assahy* palm originally from the Purus River and other parts of the upper Amazon."

"A graceful palm with a trunk seldom more than 4 inches in diameter. It is said that fats suitable for oils and soaps can be derived from the blue-black berrylike fruits, and a wine is made from them also." (*Lange, Lower Amazon, pp. 16, 461.*)

For previous introduction, see S. P. I. No. 46743.

50482 to 50484. *GUILIELMA SPECIOSA* Mart. Phœnicaceæ.

Pupunha

(*Bactris gasipaes* H. B. K.)

50482. Seeds of the "peach-palm" of the Amazon River, which ascends to the warm temperate regions of the Andes. The clustered stems attain a height of 40 feet. The fruit grows in large bunches, has a thick, firm, and mealy pericarp, and when cooked has a flavor between that of the potato and the chestnut, but superior to either. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 69.*)

For previous introduction, see S. P. I. No. 47868.

50483. "Plants of No. 13, a spineless variety."

50484. "Plants of No. 14, a spiny variety."

50485. *IRIARTEA* sp. Phœnicaceæ.

Palm.

Plants of a tall spineless ornamental palm with few unequally pinnate leaves and cuneate leaflets. Native to Brazil.

50486. *LECYTHIS* sp. Lecythidaceæ.

"Seed of a tall species furnishing hard timber much used for railroad sleepers, posts, etc."

Received as *Chytroma jarana*, a name used without a description. All species of this genus are now referred to *Lecythis*.

50487. *LUCUMA MACROCARPA* Huber. Sapotaceæ."Seed of the *cuti'iribá grande*, an edible fruit."

A medium-sized tree with cinnamon-gray bark and glabrous lanceolate leaves crowded at the tips of the branches. The globose fruit, 10 centimeters in diameter, contains 6 to 10 shining brown seeds. Cultivated in Brazil for its fruit. (Adapted from *Huber, Boletim do Museu Paraense, vol. 3, p. 57.*)

50466 to 50517—Continued.

50488. LUCUMA RIVICOLA Gaertn. f. Sapotaceæ.

"Seed of an edible fruit very much in use here. Known as *cutitiribá*."

A small handsome tree with bright-green leaves, indigenous to tropical America. The fruit is very variable, from small and carissalike to the size and shape of a large hen's egg, with yellow, sweet, rich, rather dry pulp inclosing one or two large seeds. The mealy pulp tastes somewhat like an inspiced pumpkin custard flavored with nanca. It is eaten out of hand. (Adapted from *The Philippine Farmer*, vol. 5, p. 23, and *The Philippine Agricultural Review*, vol. 9, p. 249.)

50489. MAMMEA AMERICANA L. Clusiaceæ.

Mamey.

"Seed of the *abrico*."

A tree native to tropical America, cultivated in Jamaica up to 3,000 feet. The large fruit is edible. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 296.)

For previous introduction, see S. P. I. No. 47425.

50490. MAXIMILIANA sp. Phœnicaceæ.

Palm.

"Seed."

50491. ORYZA LATIFOLIA Desv. Poaceæ.

Wild rice.

"A kind of native rice growing on not-inundated soil in Marajo. It is an interesting kind for several reasons. In the first place, it is the tallest I ever heard of, growing sometimes to a height of 8 feet. In the second place, it is a perennial kind, growing in large isolated bunches for several years, flowering and bearing seeds the whole year round. Its leaves are very broad. The kernels may not have any industrial or culinary value, but as a cattle feed the green plant might be useful. Besides this I consider this kind interesting from a phytogeographical standpoint, demonstrating that real native kinds of rice are to be found in the Amazonian region." (*Goeldi*.)

For previous introduction, see S. P. I. No. 47029.

50492. ORYZA SATIVA L. Poaceæ.

Rice.

"Plants of No. 262."

50493. ORYZA sp. Poaceæ.

Wild rice.

"Wild water rice plants."

50494. ORYZA sp. Poaceæ.

Wild rice.

"(No. 296.) Wild rice plants from Belem."

50495. ORYZA sp. Poaceæ.

Wild rice.

"(No. 290.) Wild rice plants from Soure."

50496. PHYSALIS ANGULATA L. Solanaceæ.

"Seed of *camapu*."

A much-branched herb with very small flowers and a fruiting calyx which is conical-ovoid with a sunken base, 10-angled loosely inflated, at length well filled by the greenish yellow berry. Found in open rich ground from Pennsylvania to Minnesota and southward. (Adapted from *Gray's New Manual of Botany*, seventh edition, p. 715.)

50497. ROLLINIA MUCOSA (Jacq.) Baill. Annonaceæ.

"Plants of *Cachimán morveux*."

The flowers of this species have oblong corolla lobes spreading outward in such a way as not inaptly to represent a tricorn hat. The areoles of the fruit

50466 to 50517—Continued.

are gibbous or convex. The viscous pulp is edible but of poor flavor. It grows spontaneously in the forests of Martinique and is very rarely cultivated; known locally as *cachimán morveux*. (Adapted from *Journal of the Washington Academy of Sciences*, vol. 6, p. 374.)

Received as *Annona obtusiflora*, which is referred to this species by Doctor Safford.

For previous introduction, see S. P. I. No. 44659.

50498. STENOCALYX sp. Malpighiaceæ.

"Plants."

50499. STERCULIA SPECIOSA Schum. Sterculiaceæ.

"A tall ornamental tree with seeds which are supposed to be edible after having been roasted."

50500. SYAGRUS DRUDEI Beccari. Phœnicaceæ.

Palm.

A palm with a stem 2 to 5 meters high and smooth rigid linear glaucous leaflets on a rachis $1\frac{1}{2}$ meters long. The 15 to 20 branches of the spadix are gracefully erect and bear dry yellowish drupes. Native to the central mountainous region of Brazil. (Adapted from *Martius, Flora Brasiliensis*, vol. 3, p. 412.)

50501 to 50505. THEOBROMA CACAO L. Sterculiaceæ.

Cacao.

50501. "Seeds from the Purus River. Now in cultivation here in botanical gardens."

50502. "Seeds."

50503. "Plants bearing red pods."

50504. "Plants."

50505. "Seeds of the red-shelled cacao which we obtained a few years ago from Trinidad, British West Indies, for the botanical gardens."

50506 to 50508. THEOBROMA GRANDIFLORA (Willd.) Schum. Sterculiaceæ.

50506. "*Upú-assú* fruits, the fine pulp of which is used to make refreshing drinks and jellies."

50507. "Plants."

50508. "Plants."

50509. THEOBROMA MICROCARPA Mart. Sterculiaceæ.

"Plants. Originally from the Purus River."

The seeds of this tree are used as a substitute for cacao and are even considered by some to be superior to the true cacao. It is not grown commercially as yet, however. (Adapted from *Correa, Flora do Brazil*, p. 101.)

50510 and 50511. THEOBROMA SPECIOSA Willd. Sterculiaceæ.

50510. "Plants of *cacau-y*. The small cacao, the fruits of which have a delicious pulp which one eats by sucking the seeds. It grows wild in the forests here."

50511. "Plants."

50512. THEOBROMA sp. Sterculiaceæ.

"Pods of the common variety."

50513. THEOBROMA sp. Sterculiaceæ.

"Plants of the common variety."

50514. THEOBROMA sp. Sterculiaceæ.

"Plants."

Received as *Theobroma ovata*, for which a place of publication has not yet been found.

50466 to 50517—Continued.**50515.** THEOBROMA sp. Sterculiaceæ.

"Plants of the common variety."

50516. (Undetermined.)

"Fruits."

Received as *Platonia insignis*, but it does not agree with material received earlier under that name.**50517.** (Undetermined.)

"Mamaca plants."

50518. MILLETTIA MEGASPERMA (F. Muell.) Benth. Fabaceæ.

From New South Wales, Australia. Seeds presented by Hugh Dixon, Abergeldie. Received June 3, 1920.

"This plant is quite unlike Chinese or Japanese varieties of wistaria. It has dark-green foliage and is a rank grower when established; mine is growing over a park railing 90 feet long, 4 feet wide, and 5 feet high, and has to be kept within bounds on width and height. It is not particular as to soil, but I would not advise a heavy clay. The plant stands 8 to 10 degrees of frost without injury. The flowers are darker purple than those of the Chinese variety, sweet scented, and in dense panicles. It is a very shy seeder with seldom more than one seed in a pod, but it strikes root freely when layered and also from cuttings. The root of a layer afterwards potted had the largest number of nodules I have ever seen on any leguminous plant. It is an exceedingly rare plant simply because it is not known." (Dixon.)

50519. RHUS POTANINI Maxim. Anacardiaceæ.

From Jamaica Plain, Mass. Seeds presented by Prof. C. S. Sargent, Arnold Arboretum. Received June 4, 1920.

"Collected in northern Honan by Joseph Hers." (Sargent.)

An elegant Chinese shrub remarkable for the bright coloring of the leaves in autumn. The long graceful leaves are made up of deeply serrate leaflets. (Adapted from *The Gardeners' Magazine*, vol. 52, p. 721.)

On this sumach a gall insect makes its home, producing large inflated galls which the Chinese utilize for dyeing black. The foreigners found that the galls contain a great percentage of tannin and use them for dyeing purposes, exporting vast quantities from Hankow especially, under the name of Chinese gallnuts.

For previous introduction, see S. P. I. No. 40717.

50520. CHAMAEDOREA GEONOMAEFORMIS Wendl. Phœnicaceæ.**Palm.**

From Nice, France. Seeds presented by A. Robertson Proschowsky. Received June 4, 1920.

"A very graceful dioecious palm which, on account of its small size and easy culture as a pot plant, should have some importance for decoration." (Proschowsky.)

50521. PLACUS BALSAMIFER (L.) Baill. Asteraceæ.*(Blumea balsamifera DC.)*

From Manila, Philippine Islands. Seeds presented by Elmer D. Merrill, director, Bureau of Science. Received June 6, 1920.

A perennial shrubby plant, native to Borneo. The leaves when bruised smell strongly of camphor and are used medicinally by the natives. The gum from this tree is known as "Nagai camphor." (Adapted from *Macmillan, A Handbook of Tropical Gardening and Planting*, second edition, p. 509.)

50522 to 50524. SOJA MAX (L.) Piper. Fabaceæ. Soy bean
(Glycine hispida Maxim.)

From Mukden, China. Seeds presented by Albert W. Pontius, American consul general. Received June 7, 1920.

Market beans requested for the Office of Forage-Crop Investigations.

50522. "Hei tou (black)."

"A small flat shining black bean used when boiled, salted, and fermented as the main ingredient in a sauce; also fed, when boiled, to water buffaloes." (Frank N. Meyer.)

For previous introduction, see S. P. I. No. 45294.

50523. "Hsiao chin huang tou (small golden yellow bean)."

50524. "Pai mei tou (white-crested bean)."

A late-maturing bean, yellow with a "white eyebrow."

For previous introduction, see S. P. I. No. 30745.

50525. SYZYGIIUM CUMINI (L.) Skeels. Myrtaceæ. Jambolan
(Eugenia jambolana Lam.)

From Manila, Philippine Islands. Seeds presented by Elmer D. Merrill, director Bureau of Science. Received June 8, 1920.

Duhat. A widely distributed Philippine timber tree frequently cultivated for its fruit which in size, color, and flavor resembles a black cherry. The grayish or pale brown wood is moderately hard to hard and durable; even the sapwood is rarely attacked by beetles. It is used for the building of ships, wharves, and bridges, for furniture and cabinetwork, and for the heavy parts of musical instruments. (Adapted from Schneider, *Commercial Woods of the Philippines: Their Preparation and Uses* Manila Bureau of Forestry Bulletin No. 14, p. 189.)

For previous introduction, see S. P. I. No. 43217.

50526. ACER sp. Aceraceæ. Maple

From Jamaica Plain, Mass. Seeds presented by Prof. C. S. Sargent, Arnold Arboretum. Received June 11, 1920.

"A green-barked variety collected in northern Honan, China, by Joseph Hers." (Sargent.)

50527. ATTALEA COHUNE Mart. Phœnicaceæ. Cohune

From Ceiba, Honduras. Seeds presented by Charles N. Willard, American consul. Received June 11, 1920.

"With the demand for combating the use of poison gas in the war, it was found that the shell of the cohune nut when carbonized acted as a preventive against the injurious effects of the gas. It therefore became the principal element used in the manufacture of the gas mask. The utilization of the cohune nut for war purposes served to bring to light an industry which may be permanent, namely, the extraction of oil from the kernel of the nut. The cohune (or corozo) nut is a product of the manaca palm, indigenous to tropical countries, and is found mostly on low, damp lands, along creeks and rivers. It thrives best in the deep forests, and the greatest supply is found in virgin forest lands, of which there are extensive areas in Honduras.

"The nuts grow in large oblong clusters weighing probably 75 pounds each. A single tree will have from one to four clusters on it at a time, with an average production of four clusters a year to the tree. The nut varies in size from 1½ to 3 inches in length and from 1 to 2 inches in diameter. The shell is hard and dense, with an average thickness of one-fourth to half an inch. For cracking the nuts preparatory

to extracting the oil, two varieties of machines are used. One is designated a 'knuckle' machine, in which the nuts drop from a hopper between heavy knuckles, thus cracking the shell. The other is called an 'impact' machine. It operates by a centrifugal motion which propels the nut against the side of a large metal bowl with sufficient force to break the shell. The oil can then be extracted from this copra, or crushed product.

"The oil is high grade, said to be superior to coconut oil, and finds a ready sale for cooking purposes, being claimed to be adapted for any use to which a good cooking oil may be put.

"The Aguan River valley contains a single field of these nut-bearing trees extending 60 to 70 miles up the river from its mouth and with an average width of 10 to 12 miles." (Willard.)

50528. ANANAS SATIVUS Schult. f. Bromeliaceæ. **Pineapple.**

From San Jacinto, D. F., Mexico. Shoots presented by Sr. José Duvallon, Director de Agricultura. Received June 19, 1920.

"A spineless pineapple, called *Cayena*, from Coatepec zone." (Duvallon.)

50529. CYCLAMEN ROHLFSIANUM Aschers. Primulaceæ. **Cyclamen.**

From Libia, Tripoli. Tubers presented by Dr. E. O. Fenzi. Received June 19, 1920.

"I hope that some of your cyclamen specialists may succeed in evolving a new type combining the characters of Cyclamen and of Dodecatheon." (Fenzi.)

A plant native to the grottos of Gureina, Libia, where the yellow ellipsoid tubers grow in the fissures. The stem, 5 centimeters long, bears circular leaves, variegated with silvery splotches and variously incised, on petioles 3 to 18 centimeters long. The fragrant pale-purple flowers appear in autumn; the exserted anthers bring it near the neighboring genus, Dodecatheon. (Adapted from *Bulletin de l'Herbier Boissier*, vol. 5, p. 528.)

50530. ZELKOVA SINICA C. Schneid. Ulmaceæ.

From Jamaica Plain, Mass. Seeds presented by Prof. C. S. Sargent, director, Arnold Arboretum. Received June 19, 1920.

A rare Chinese tree about 17 meters (60 feet) high, with smooth pale-gray bark which exfoliates in small thin roundish flakes, leaving many brown scars. The small leaves are crenately serrate. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 286.)

50531 to 50539.

From Keijo, Chosen (Korea). Seed presented by Miss Katherine Wambold. Received June 21, 1920.

50531. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

"*Soo soo*; may be used for bread or porridge."

For previous introduction, see S. P. I. No. 42060.

50532. PERILLA FRUTESCENS (L.) Britton. Menthaceæ. **Perilla.**

"*Tül kai*, or *tül gäi*, utilized for oiling the excellent oil paper used on mud floors in Chosen."

For previous introduction, see S. P. I. No. 42062.

50533. PHASEOLUS ANGULARIS (Willd.) W. F. Wight. Fabaceæ.

Adsuki bean.

"*Pat*, peas."

For previous introduction, see S. P. I. No. 42063.

50531 to 50539—Continued.

50534. PHASEOLUS AUREUS Roxb. Fabaceæ.

Mung bean

"Nòk too; used for 'mook,' a jelly."

For previous introduction, see S. P. I. No. 42064.

50535 and 50536. SOJA MAX (L.) Piper. Fabaceæ.
(*Glycine hispida* Maxim.)

Soy bean

50535. "Kong bean."

For previous introduction, see S. P. I. No. 42059.

50536. "Kong bean; this is used for making sauce."

50537. VIGNA CYLINDRICA (Stickm.) Skeels. Fabaceæ.

Catjang

"Tong poo; may be used as 'mook,' a sort of jelly."

50538. VIGNA SESQUIPEDALIS (L.) Fruwirth. Fabaceæ.

Yard-Long bean

"Pat ke cho kiwang, for flour or bread."

50539. ZIZIPHUS JUJUBA Mill. Rhamnaceæ.
(*Z. sativa* Gaertn.)

Jujube

"Tai chew, Korean dates."

50540 to 50542.

From Paris, France. Plant material purchased from Vilmoren-Andrieux & Co.
Received May 20, 1920.

50540. MOLINIA CAERULEA (L.) Moench. Poaceæ.

Grass

Seed of a grass which is introduced in a few localities in the Eastern States from New England to Pennsylvania. In Europe this is considered to be a good forage grass. A form with striped leaves is cultivated as an ornamental for use in borders. (Adapted from *Hitchcock, Genera of Grasses of the United States*, U. S. Department of Agriculture Bulletin No. 772, p. 50.)

In the early stages this grass makes a fairly good grade of hay.

50541. STACHYS SIEBOLDII Miquel. Menthaceæ.

Tubers of a Chinese plant valuable for food. It is completely hardy and easy of cultivation. The crisp ivory-white tubers, 2 to 3 inches long, may be eaten in the fresh state, boiled, fried like salsify, made into sauce, or made into fritters. An analysis of the tubers shows the following percentages: Starch 17.80; protein, 4.31; fat, 0.55; cellulose, 1.34; mineral, 1.81; water, 74.15. (Adapted from *Gardeners' Chronicle*, third series, vol. 3, p. 16.)

For previous introduction, see S. P. I. No. 21702.

50542. TRISETUM FLAVESCENS (L.) Beauv. Poaceæ.

Grass

"A grass resembling tall meadow oat-grass, growing on open ground, in copses and meadows, which may prove valuable as a forage crop. Native to Europe and Asia." (*A. S. Hitchcock*.)

50543 to 50579. PYRUS spp. Malaceæ.

Pear

From Talent, Oreg. Cuttings collected in China by Prof. F. C. Reimer, superintendent, Southern Oregon Agricultural Experiment Station. Received January 9, 1920. Numbered June, 1920.

"Varieties which I regard as very promising for America and of very great value. The introduction of this material, I believe, marks an epoch in American horticulture; this material can not be duplicated without great cost and real personal risk. (Reimer.)"

"We have this material grafted on four kinds of stocks which will give us an interesting experiment, namely, Kieffer stocks, *Pyrus serrulata* stocks grown by us here."

French stocks sent to us by Jackson & Perkins, and Japanese stocks sent to us by Prof. Reimer. The grafts will be put out in the department grounds and watched this summer for the presence of insects and disease." (B. T. Galloway.)

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| 50543. "No. 1." | 50562. "No. 20." |
| 50544. "No. 2." | 50563. "No. 21." |
| 50545. "No. 3." | 50564. "No. 22." |
| 50546. "No. 4." | 50565. "No. 23." |
| 50547. "No. 5." | 50566. "No. 24." |
| 50548. "No. 6." | 50567. "No. 25." |
| 50549. "No. 7." | 50568. "No. 26." |
| 50550. "No. 8." | 50569. "No. 27." |
| 50551. "No. 9." | 50570. "No. 28." |
| 50552. "No. 10." | 50571. "No. 29." |
| 50553. "No. 11." | 50572. "No. 30." |
| 50554. "No. 12." | 50573. "No. 31." |
| 50555. "No. 13." | 50574. "No. 32." |
| 50556. "No. 14." | 50575. "No. 33." |
| 50557. "No. 15." | 50576. "No. 34." |
| 50558. "No. 16." | 50577. "No. 35." |
| 50559. "No. 17." | 50578. "No. 36." |
| 50560. "No. 18." | 50579. "No. 37." |
| 50561. "No. 19." | |

50580. ARALIA CACHEMIRICA Decaisne. Araliaceæ.

From Rochester, N. Y. Plant presented by John Dunbar, assistant superintendent of Parks. Received March 30, 1920. Numbered June, 1920.

A vigorous, erect, roughly pubescent shrub, 5 to 10 feet high, native to the temperate Himalayas. The large leaves have pale lower surfaces and the white flowers are borne in paniced umbels. It is a useful fodder for goats. (Adapted from Collett, *Flora Simlensis*, p. 216, and Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 287.)

For previous introduction, see S. P. I. No. 42607.

50581. GOSSYPIUM sp. Malvaceæ. Cotton.

From the City of Mexico, D. F., Mexico. Seed presented by Francisco V. Vidal. Received April 26, 1920.

"A drought-resistant cotton tree which has grown by accident in a crack in the cement between a masonry vault and a wall. The conditions under which the plant has developed both regarding food and moisture have been remarkable. The plant has produced about 230 bolls. There are others like it growing wild in the vicinity which present the same characteristic of resistance to drought, but not in such a degree as this one. Although the boll is small, I have decided to plant the seeds again in a regular field and cultivate them." (Vidal.)

50582. ALLIUM SATIVUM L. Liliaceæ. Garlic.

From Tamingfu, Chihli, North China. Sets presented by Rev. Horace W. Houlding, South Chihli Mission. Received June 19, 1920.

"Compound bulbs of the white garlic common here. Immense quantities are used all through this region." (Houlding.)

50583. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen

From Canton, Kwangtung, China. Tubers presented by G. Weidman Groff
Canton Christian College. Received June 28, 1920.

"*Hung nga u*. A popular variety widely planted in Kwantung. Not so long in form as the *Pan long u*, which it resembles except for the red coloring of the sprout which gives it its name of 'redbud.' The flesh is white but spotted with yellow; very mealy and good. A medium early variety and heavy yielder. Planted in February or March and harvested about September. It is planted widely and brings a high price on the markets." (Groff.)

50584 to 50586.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 18, 1920. Quoted notes by Mr. Popenoe.

50584. PERSEA AMERICANA Mill. Lauraceæ. Avocado
(*P. gratissima* Gaertn. f.)

"(No. 386. May 30, 1920.) Budwood of avocado No. 44, from the grounds of Chaille and Assmann, in San Vicente, a suburb of San Jose. This variety recommended by Don Otón Jimenez as the best with which he is familiar. It is of the West Indian race and is said to have been grown from a seed brought from Santa Clara, on the Atlantic side of Costa Rica. The tree is probably 30 or 40 years old at least and is 40 feet high, broad, and round topped, with a well formed crown and a shapely trunk branching 8 to 10 feet above the ground. The fruit, which is said to ripen in September and October, is green, obovoid in form, and probably a pound in weight at maturity. I have not seen the mature fruit, hence can not describe its quality nor the size of the seed.

"It is thought that some of the West Indian varieties of Costa Rica, which have been grown in the highlands at altitudes of 4,000 to 6,000 feet, may ripen their fruits at a time of the year which will make them valuable in California or Florida, more probably the latter. The variety under consideration comes from an altitude of approximately 4,000 feet. It can not be expected that it will prove to be much hardier than the West Indian sorts now grown in Florida.

50585. PERSEA AMERICANA Mill. Lauraceæ.
(*P. gratissima* Gaertn. f.)

"(No. 387. May 30, 1920.) Budwood of the *aguacate de anís*, *aguacate de mono*, or *aguacate de manzana* (anise-flavored avocado, monkey's avocado, or apple avocado). A wild avocado which I have seen only in the vicinity of La Palma and San Isidro, about 15 miles from San Jose, but which is reported also from Turrialba. The character of the tree and fruit are such as to suggest that this species, which is certainly indigenous in the mountains of central Costa Rica, is the wild prototype of the cultivated Guatemalan race, if not of the West Indian as well (since it is believed that both races are derived from a single species). The fruiting habit of the tree suggests the Guatemalan race more than the West Indian, as also the hard, granular shell and the general character of the fruit. The only point in which the plant differs noticeably from the cultivated Guatemalan avocado is in the aniselike odor and flavor of the bark, leaves, and fruit. The wild tree, which has been studied by Don Otón Jimenez and myself, has been observed up to the present only at elevations between 4,500 and 5,000 feet. It is not found in the forest, but, like several other species of *Persea* and allied genera which occur in Costa Rica, frequents open places close to small streams and brooks or is found associated with a few other trees along the margins of such watercourses. The region in which it grows is one of abundant rainfall with cool but never cold weather, and the soil is a substantial clay loam. The trees we have seen have not been in any case more than 40 feet high, and all were of erect

50584 to 50586—Continued.

almost slender habit. In general appearance they can scarcely be distinguished from Guatemalan avocados; the foliage is of a somewhat lighter shade of green than is common in the latter. The leaves are thick and stiff (for an avocado), glabrous on the upper surface, and sparsely puberulent below. The fruits, so far as observed, are borne singly on stout fruitstalks about 4 inches long. The form is roundish oblate, the greatest diameter being 2 to 3 inches. The stem is inserted without depression, nearly centrally, and the apex is only slightly flattened. There is sometimes a faint crease down one side of the fruit, from the stem nearly to the apex. The surface is moss green in color and distinctly pebbled. The dots are few to numerous, small and yellowish. The skin is 1 to 2 millimeters thick, very coarsely granular in texture, and so hard as to be woody. The flesh is dull whitish or pale brown near the seed, frequently yellowish in the fully ripe fruit, and close to the shell tinged with green. There are no fibers through the flesh, but there are numerous small, hard bodies which suggest the stone cells of certain pears. These give the flesh a gritty feeling in the mouth, described as 'sandy' by the natives. The flavor is strong, suggesting anise, but with a less noticeable nutty flavor, such as is possessed by cultivated avocados. The aniselike element is so predominant and so strong that the fruit is scarcely edible. I am told, however, that it varies in quantity and that the fruits of some trees are much better than those of others. The seed is very large, oblate, with both seed coats adhering closely to the cotyledons. It resembles in every way the seeds of many Guatemalan avocados. The flowering season is March and April, and the fruits ripen a year from the following May or June; that is, in 12 to 15 months. The fruits from some of the wild trees are harvested by the natives and carried into the villages, where they are sold. In general, however, the *aguacate de anis* is little esteemed, most of the natives going so far as to say it is not good to eat. In regard to the common name, *aguacate de anis* is the one generally used in the vicinity of La Palma, and *aguacate de mono* is occasionally heard. In Turrialba I am told that the name *aguacate de manana* is current.

"This species will be studied further to determine its relationship with the cultivated avocados. It is introduced with this object in view and in the hope that it may prove to be a vigorous stock plant on which to graft some of the cultivated avocados."

50586. *DUGGENA PANAMENSIS* (Cav.) Standl. Rubiaceæ.

"(No. 385. May 30, 1920. Herb. No. 991.) Cuttings of an attractive shrub found wild and cultivated in the region of La Palma, at elevations of about 5,000 feet. The region is one of cool, moist climate and heavy soil. The plant, which has narrow, long-pointed leaves, is of erect habit and reaches about 10 feet in height. Its flowers, which are freely produced on graceful pendent panicles about 4 inches long, are small, star shaped, and of delicate pink color. Said to grow readily from cuttings. The species merits a trial in southern Florida and California."

50587. *ORYZA SATIVA* L. Poaceæ.

Rice.

From Vercelli, Italy. Seed presented by Dr. Novello Novelli, director, Stazione Sperimentale di Riscicoltura. Received June 12, 1920.

"*Yellow Early Ardiszone*." (Novelli.)

A rice of low erect growth with delicate yellowish green culms. The endosperm is brittle, permitting the securing of a commercial rice of pearly transparent brightness, with a faint yellow tinge. The ability to stool is on the average with, in some cases superior to, that of the common early rices, and from the reports of the weight of the unpolished grain one may conclude that this variety is very productive. The residue from milling is good, and there is but a small percentage of waste. (Adapted from *Il Giornale di Riscicoltura*, vol. 9, p. 20.)

50588. ULMUS PUMILA L. Ulmaceæ.**Elm**

From Peking, Chihli, China. Seed presented by the Forestry Department of the Ministry of Agriculture and Commerce, through Forsythe Sherfesees. Received June 22, 1920.

The Chinese drought-resistant elm which has proved to be a very valuable tree for practically the entire United States.

For previous introduction, see S. P. I. No. 45025.

50589. ULMUS PUMILA L. Ulmaceæ.**Elm**

From Nanking, Kiangsu, China. Seeds presented by J. Hers, secretary of the Lung Hai Railway, from near Chengchow, Honan, through John H. Reiser of Nanking University. Received June 24, 1920.

"The Chinese elm has proved to be adapted to a very wide area of country. It has proved to be one of the best trees for shelter-belt work in the arid Northwest and thrives in the central part of the Great Plains region and throughout California." (David Fairchild.)

For previous introduction, see S. P. I. No. 45025.

50590. ANDROPOGON sp. Poaceæ.**Grass**

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderys. Received July 29, 1920.

Numbered for convenience in testing by the Office of Forage-Crop Investigation.

50591 and 50592.

From New Orleans, La. Plant material presented by Charles Dittmann. Received May 29, 1920. Quoted notes by Mr. Dittmann.

50591. ASTROCARYUM sp. Phœnicaceæ.

"*Indaiassu* nuts from Brazil."

This might be the one from which the fiber *tucum* is obtained.

50592. COUEPIA sp. Rosaceæ.

"*Oticia* nuts from Brazil."

50593. ANDROPOGON sp. Poaceæ.**Grass**

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderys. Received July 29, 1920.

Numbered for convenience in testing by the Office of Forage-Crop Investigation.

50594 and 50595. ORBIGNYA SPECIOSA (Mart.) Barb.-Rodr. Phœnicaceæ.**Babassu**

From New Orleans, La. Plant material presented by Charles Dittmann. Received May 29, 1920. Quoted notes by Mr. Dittmann, except as otherwise stated.

50594. "Babassu nuts from Brazil. (No. 1.)"

"In the Provinces of El Oro and Azuay, Ecuador, is a large American-owned tract of land called 'Rosa de Oro y Piedad,' which is located partly among the foothills of the western Andes and partly on the coastal plain, about 5,000 acres being practically level. With the exception of a limited area that has been cleared for pastures and cacao growing, the property is covered with the usual tropical growth, including timber of variable value.

"Nut-bearing palm trees (*Orbignya speciosa*) occupy a fan-shaped area 10 miles wide and many miles long, one plot of a thousand acres carrying 10 more trees to the acre. Each tree bears one to three bunches of nuts, a bunch containing 5,000 to 9,000 nuts, and has a stalk several feet in length with 500 to 7

50594 and 50595—Continued.

branch stalks, each of which bears 5 to 20 nuts. When the nuts are ripe the stalk falls to the ground, the harvest continuing throughout the year. The estimated average yield of nuts per tree each year is 1,000 pounds, one-half the weight being lost in drying. The kernel represents one-third the weight of the dried nut and contains 60 per cent of palm oil, each tree averaging 100 pounds of oil.

"Machinery has been installed for crushing the nuts and extracting the oil, which finds a market in the United States." (*Frederick W. Goding.*)

For previous introduction, see S. P. I. No. 41254.

50595. "*Babassu* nuts from Brazil. (No. 2.)"

See preceding number for description.

50596. ANDROPOGON sp. Poaceæ.**Grass.**

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderyst. Received July 29, 1920.

Numbered for convenience in testing by the Office of Forage-Crop Investigations.

50597 to 50607.

From Guayaquil, Ecuador. Seeds presented by James Birch Rorer, Asociación de Agricultores del Ecuador. Received June 14, 1920. Quoted notes by Mr. Rorer except where otherwise noted.

50597. ANNONA SQUAMOSA L. Annonaceæ.

Sugar-apple.

"Seeds from two very good fruits, from Chobo, Las Guayas, Ecuador."

For previous introduction, see S. P. I. No. 47875.

50598. CAESALPINIA PULCHERRIMA (L.) Swartz. Cæsalpiniaceæ.

"*Pride of Barbados*, from Chobo, Las Guayas, Ecuador."

This *Caesalpinia* is widely distributed throughout the Tropics because of the beauty of its blossoms. Where favorably situated, with plenty of light and sunshine and ample space for development, it attains the dimensions of a large shrub or small tree. Its dark-green pinnate leaves are decidedly ornamental, and the flowers, 2 inches in diameter, in magnificent open clusters at the points of the shoots, are scarlet, edged with gold, a striking combination, the effect of which is heightened by the crisping or frilling of the margins of the petals. The long red stamens also form another notable feature. (Adapted from the *Journal of Horticulture and Home Farmer*, third series, vol. 66, p. 204.)

50599. CANNA sp. Cannaceæ.

Canna.

"*Plantanillo*, a wild canna with yellow flowers, from Chobo, Las Guayas, Ecuador."

50600. CANNA sp. Cannaceæ.

Canna.

"*Plantanillo*, a wild canna with red flowers, from Chobo."

50601. CASSIA OCCIDENTALIS L. Cæsalpiniaceæ.

"Small legume possibly good for cover crop, from Pascuales, Las Guayas, Ecuador."

A low shrub with a leaf like the mimosa. The Stinkard's root, as it is sometimes called, is a powerful drastic; homeopaths infuse it in spirits of wine and employ it as quinine; the beans are sometimes made into coffee, as maize is in the United States. (Adapted from *Burton, The Highlands of Brazil*, vol. 2, p. 60.)

For previous introduction, see S. P. I. No. 42830.

50597 to 50607—Continued.

50602. *MAXIMILIANEA VITIFOLIA* (Willd.) Krug and Urb. Cochlospermaceæ.
(*Cochlospermum hibiscoides* Kunth.)

"Silk cotton, seed and lint from Summit, Canal Zone."

"A common shrub or small tree of eastern and central Guatemala from the highlands at about 4,000 feet down to a level of 1,000 feet or perhaps lower. The plant occasionally reaches a height of 35 feet, is always stiff, rather sparsely branched, and bears stout branchlets which usually carry leaves only toward their tips. The plant is leafless from December or January to May in most sections, and at this period it produces at the end of the branchlets numerous large yellow flowers, single, brilliant in color, with a deep-orange center. They are followed by oval seed pods as large as a hen's egg." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44821.

50603. *MIMOSA* sp. Mimosaceæ.

"*Espiño*, from Chobo, Las Guayas, Ecuador, a plant which may become a pest in pastures, but is good for hedges."

50604. *PRUNUS SEROTINA* Ehrh. Amygdalaceæ.

Capulin.

"Capulin, from Ambato, Ecuador."

"The wild cherry, found both wild and cultivated in the mountains of Guatemala, from elevations of about 4,000 feet up to 9,000 feet or perhaps higher. As commonly seen, the tree is erect, often somewhat slender, reaching a height of about 30 feet, the trunk stout and occasionally as much as 3 feet thick, and the bark rough and grayish. The young branchlets are dotted with grayish lenticels. The leaves, which are borne upon slender petioles three-fourths of an inch long, are commonly $4\frac{1}{4}$ inches in length, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches in breadth at the widest point, oblong-lanceolate in outline, with a long, slender tip. The upper surface is dull green, the lower surface glaucous, and the margin is rather finely serrate. The flowers, which are produced from January to May, are white about three-eighths of an inch wide, and very numerous on slender racemes 2 to 4 inches in length. As many as 15 or 20 fruits sometimes develop on a single raceme, but many drop off before reaching maturity, with the result that two to five ripe fruits are commonly found on each raceme. The season of ripening in Guatemala is from May to September. The ripe fruits, which are slightly oblate in form and up to three-fourths of an inch in diameter, separate readily from the short fruitstalks, leaving the green 5-toothed calyxes adhering to the latter. In color the fruit is deep glossy maroon-purple. The skin is thin and tender, but so firm that the fruit is not easily injured by handling. The flesh is pale green, meaty, but full of juice. The flavor is sweet, suggestive of the Bigarreau type of cherry, with a trace of bitterness in the skin. The stone is a trifle large in comparison to the size of the fruit.

"Pleasant to eat out of hand, this cherry can also be eaten in various other ways—stewed or made into preserves or jams. In Guatemala it is most commonly eaten out of hand and as a sweet preserve.

"This species does not appear to be adapted to hot tropical seacoasts, but it seems to be distinctly subtropical in character. It may succeed in moist subtropical regions, such as Florida, where other types of cherries do not thrive." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 44885.

50605. *PSIDIUM GUAJAVA* L. Myrtaceæ. Guava

"Seeds from the largest fruit of this kind I have ever seen; it measured a little over 3 inches in diameter."

For previous introduction, see S. P. I. No. 48575.

50597 to 50607—Continued.

50606. *SIDA RHOMBIFOLIA* L. Malvaceæ.

"Escoba, from Chobo, Las Guayas, Ecuador."

A half-shrubby weed growing by the roadsides and in open places, having yellow flowers which open at about half-past 10 o'clock in the morning and soon fade to a whitish color. It yields a good fiber, which in Australia is known as Queensland hemp. This is fine, strong, white, and lustrous and is easily extracted. It is softer and finer than jute, but shorter. Experiments made with this fiber show that a cord 12.5 millimeters in circumference will sustain a weight of 400 pounds. In Guam fresh plants are gathered each morning and made into bundles which serve as brooms. (Adapted from *Safford, Useful Plants of Guam, p. 375.*)

For previous introduction, see S. P. I. No. 46990.

50607. *SOLANUM QUITOENSE* Lam. Solanaceæ.

Naranjilla.

"Naranjilla. From fruits bought in the market at Guayaquil, Ecuador."

For previous introduction, see S. P. I. No. 47951.

50608. *SYZYGium CUMINI* (L.) Skeels. Myrtaceæ.

Jambolan.

(*Eugenia jambolana* Lam.)

From Manila, Philippine Islands. Seeds presented by Elmer D. Merrill, director, Bureau of Science. Received June 19, 1920.

A tall handsome tree native to southern Asia, ascending to an altitude of 5,000 feet in Kumaon and Polynesia and probably hardy in extratropical latitudes. The edible fruit is about the size of a cherry and is purplish black when ripe; it may perhaps be improved by culture; fruits 1½ inches long have been produced under cultivation. The seeds are used as a remedy for diabetes. (Adapted from *Mueller, Select Extra-Tropical Plants, p. 213.*)

For previous introduction, see S. P. I. No. 43217.

50609 to 50623.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received June 7, 1920. Quoted notes by Mr. Johnson.

50609. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 182.) A rather abundant rhizomatous plant from Chama, with smooth leaves 6 to 12 inches in diameter. The cymes of white flowers on long stems are very ornamental."

50610. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 173.) An upright plant from Chama, with white flowers and reddish leaves."

50611. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 180.) An upright plant from Coban, with pink flowers. Seems to prefer clay soils."

50612. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 181.) An upright plant from Chama, with smooth leaves and pink flowers. Very ornamental when in full flower."

50613. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 172.) Similar to *Begonia ricinifolia*. A plant from Chama, with pink flowers and leaves marked with deep green on a lighter field. Plant smaller here."

50614. *CHAMAEDOREA* sp. Phoenicaceæ.

Pacaya.

"(No. 183.) Pacaya palm."

For previous introductions, see S. P. I. No. 44059.

50609 to 50623—Continued.

50615. *IPOMŌEA* sp. Convolvulaceæ. Morning-glory.

"(No. 176.) A very ornamental vine, vigorous, covered with soft prickles. The flowers, 4 to 5 inches in diameter, are pink with deeper pink veins; the throat is yellow and the corolla thick and succulent."

50616. *LASIACIS DIVARICATA* (L.) Hitchc. Poaceæ. Grass.

"(No. 177.) A grasslike plant climbing up in second growth."

For previous introduction, see S. P. I. No. 24879.

50617. *NYMPHŌEA BLANDA* G. F. W. Meyer. Nymphaeaceæ. Water lily.

"(No. 184.) A tender, night-blooming water lily from Lago Izabal, native to tropical America, with creamy white flowers, 4 inches across, closing very early in the morning." (*Peter Bisset.*)

50618. *PASSIFLORA FOETIDA* L. Passifloraceæ.

"(No. 175.) A hairy leaved plant, not a large grower, which may be of value in hybridizing or as an ornamental. The flowers are light purple to almost blue, and the calyx is lacinated. The edible fruit is bright cherry red, shining, and three-eighths to three-fourths of an inch in diameter."

For previous introduction, see S. P. I. No. 38989.

50619. *RUBUS* sp. Rosaceæ. Raspberry.

"(No. 167.) A vigorous grower with canes fully 10 feet long."

50620. *SOLANUM* sp. Solanaceæ.

"(No. 168.) From hillsides above Tactic. The plant climbs up through the underbrush. The leaves are similar to those of a tomato plant, and the fruits look exactly like a small pepino (*Solanum muricatum*) and are about half an inch long. I have not been able to find any use for the fruit, though it does not have a bad flavor. It may be of use to cross with the pepino to produce a more robust and fruitful plant."

50621. *TECOMA* sp. Bignoniaceæ.

"(No. 179.) A vine which grows to the tops of lofty trees and is very handsome when in flower. The flowers are pink and borne in terminal clusters."

50622. (Undetermined.)

"(No. 169.) A very pretty, semiscandent, lax plant, climbing up in the second growth and flowering throughout the year; the fine tubular flowers are bright red."

50623. (Undetermined.)

"(No. 185.) A small epiphytic shrub 2 to 2½ feet high with lavender, lilac-like flowers in spikes 4 to 12 inches long borne from the very base of the plant almost to the top. It is very pretty and floriferous and may be useful as a hothouse plant. It should be easy to root from cuttings, as the plant is hardwooded. This specimen was found growing on a stump on the road to Chama."

50624. *KOKIA DRYNARIOIDES* (Seem.) Lewton. Malvaceæ. Kokio.

From Honolulu, Hawaii. Seeds presented by J. F. Rock, botanist, College of Hawaii. Received May 20, 1920.

"Seeds from a cultivated tree on Molokai." (*Rock.*)

An interesting tree with long-petioled cordate leaves and red, silky flowers. The seeds in the thick woody ovoid capsule are covered with a short reddish brown tomentum. Several trees occurred on the west end of Molokai at Mahana, but have now died, owing to the ravages of cattle, sheep, and goats which eat off the bark and leaves. (Adapted from *Rock, The Indigenous Trees of the Hawaiian Islands*, p. 307.)

For previous introduction, see S. P. I. No. 47223.

50625 to 50634.

From Cape Town, Cape Colony. Seeds presented by J. Burt Davy through George H. Murphy, American consul general. Received June 18, 1920.

"An exceedingly valuable consignment which might be useful in Porto Rico."

50625 to 50633. *COFFEA* spp. Rubiaceæ. Coffee.

50625. *COFFEA ARABICA COLUMNARIS* Cramer.

A variety of *Coffea arabica* which is characterized by its slender columnar growth. (Adapted from *Teysmannia*, vol. 18, p. 230.)

50626. *COFFEA ARABICA MARAGOGIPE* Froehn.

This variety is distinguished by the larger size and thicker character of the leaves and fruit, and in these points it tends toward *Coffea liberica*. It was discovered by Crisogono José Fernandez in 1870, and because of the fine flavor of the beans has been introduced into Brazil and the English colonies. (Adapted from *Engler, Botanische Jahrbücher*, vol. 25, p. 263.)

50627. *COFFEA ARNOLDIANA* Wildem.

A Belgian Kongo plant with deep-green obovate or oblong leaves, shining above, becoming a deep reddish brown when dry. There are one to five flowers to an involucre in the axillary inflorescence; the calyx is glossy and the disk prominent in the fruit. (Adapted from *Wildeman, Mission Emile Laurent*, p. 325.)

50628. *COFFEA ARUWIMIENSIS* Wildem.

A sturdy tree with oblong or oblong-lanceolate leaves, obtuse at the apex, the tip shortly acuminate, cuneiform at the base, brown when dry, paler beneath. The flowers with short involucres are in axillary globular clusters. The persistent sepals completely inclose the fruit, which is surmounted with a short cylindrical disk. The inflorescence is covered with a thick varnish, which is shining when dried. Native to Belgian Kongo. (Adapted from *Wildeman, Mission Emile Laurent*, p. 321.)

50629. *COFFEA CANEPHORA SANKURUENSIS* Wildem.

A plant with elliptic-oblong leaves shortly acuminate, rounded at the base and summit, dull and paler beneath, shining above. The 5-parted flowers are in dense cymes united in a common involucre of which the stipulelike bracts are triangular and keeled. There are three to four inflorescences in each leaf axil. The fruits, with one or two seeds, are in dense, almost sessile clusters. (Adapted from *Wildeman, Mission Emile Laurent*, p. 330.)

50630. *COFFEA CONGENSIS CHALOTII* Pierre.

A Belgian Kongo plant with leaves 20 centimeters long and inflorescences either solitary or two or three in each leaf axil. The bracts enveloping the inflorescence are short and linear or long and broad. The flowers are five or six parted. A fruiting cyme may bear five slender-pedicelled fruits in a cluster. The fruiting pedicel is always longer than the bract. (Adapted from *Wildeman, Mission Emile Laurent*, p. 335.)

50631. *COFFEA DEWEVREI* Wildem. and Dur.

A tree 15 meters high with shining gray bark and obovate-elliptic leaves, shining above, and yellow when dried. The 5-parted corolla has a tube 1 centimeter long and elliptic-lanceolate lobes; the red fruit is elliptical. (Adapted from *Bulletin de la Société Royale de Botanique de Belgique*, vol. 38, p. 202.)

For previous introduction, see S. P. I. No. 31758.

50625 to 50634—Continued.

50632. *COFFEA EXCELSA* Cheval.

A species closely allied to *Coffea liberica*, but a stronger grower and apparently a better producer; the seeds, however, are smaller than that of the true Liberian coffee. It is apparently a plant which has considerable powers of thriving under very adverse conditions. Nearly 9 pounds of berries to a tree have been gathered from this variety. It prefers low situations, but may be planted up to 2,000 feet above sea level. They are large-leaved trees of vigorous growth.

Below is a table showing the weight (in kilograms) of berries of various coffees required to give 1 kilogram of marketable coffee:

Coffea canephora var. *sankuruensis*, 4.7; *C. canephora*, 3.8; *C. robusta* (Java), 3.8; *C. excelsa*, 5.5; *C. liberica*, 12; *C. dewevrei*, 8.3; *C. aruviniensis*, 6.7. *C. excelsa* is found in the wild state in central Africa at altitudes of 2,200 feet in a climate which is dry for six months of the year and has a rainfall of at least 40 inches during the remaining six months. The temperature in summer is tropical, while in December and January it falls below 10° C. (50° F.) at night. This type does well in equatorial regions, has a satisfactory strength in caffeine, and though somewhat bitter it has an excellent flavor. In Tonking its growth has been remarkable and entirely free from insect and fungoid pests. The bean is small and uniform in size, and it is hoped to sell it in competition with Arabian coffee blended with Mocha. In appearance it is less luxuriant than *C. liberica*, though it is hardier and earlier. This species is particularly robust in Java. It commences to flower in the second year and yields a crop of berries in the third year.

The value of the coffee approaches that of the Liberian coffee and amounts to about £20 per acre. The beans require particular care, since they are inclosed within a thin skin which must be completely removed before the highest prices can be obtained. (Adapted from *Bulletin of the Department of Agriculture, Trinidad and Tobago*, vol. 17, p. 62.)

50633. *COFFEA* sp.

Received as *Coffea wannirukula*, for which a place of publication has not yet been found.

50634. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ.

Oil palm.

The trunk of the oil palm is from 15 to 25 meters in height and is crowned with a cluster of 23 to 30 pinnate leaves. In the center of this crown is the terminal bud, consisting of young leaves closely folded, the tissue of which is white and tender. This is the palm-cabbage which the natives use largely for food.

Incisions are made in the terminal part of the trunk, and often the tree is felled in order to prepare from the pith palm wine, a drink which is very much enjoyed by the natives. In certain regions of the Ivory Coast they cultivate this palm almost entirely for the wine and do not hesitate to sacrifice thousands of trees every year to obtain the palm must.

The tree does not begin to produce fruit until toward the fifth year. This fruit is more or less like an elongated and flattened plum. It grows in bunches, the weight of which varies, according to the variety and the country, between 5 and 12 or even 15 kilograms. The pericarp of the fruit is fleshy and fibrous and very rich in fatty matter, and from it the palm oil is extracted. When the pericarp is removed, the palm nut, which is very hard, remains, and this contains the kernel from which palm-nut oil is extracted.

50625 to 50634—Continued.

There are numerous varieties of oil palms along the West African coast extending sometimes for a distance of 100 or 125 kilometers. In 1909 the palm trees in West Africa produced more than 100,000 tons of oil and 250,000 tons of palm kernels, and yet this is only a part, perhaps a third, of the amount that Africans could supply, allowing about another third, which is required by the natives for food. (Adapted from *The Monthly Bulletin of Agricultural Intelligence and Plant Diseases*, vol. 2, p. 314.)

For previous introduction, see S. P. I. No. 48633.

50635 to 50647.

From Nanking, Kiangsu, China. Seeds presented by John H. Reisner, University of Nanking. Received April 9, 1920. Quoted notes by Mr. Reisner.

50635. *ALEURITES FORDII* Hemsl. Euphorbiaceæ. Tung-oil tree.

"From Chuchow, Anhwei, north of Yangtze."

For previous introduction and description, see S. P. I. No. 44661.

50636 and 50637. *CUCUMIS SATIVUS* L. Cucurbitaceæ. Cucumber.

50636. "Chinese long green." 50637. "Chinese long white."

50638. *GLEDITSIA SINENSIS* Lam. Cæsalpiniaceæ.

"A handsome Chinese tree known as 'Tsao-k'o shu,' abundant throughout the Yangtze Valley up to 3,500 feet altitude. It grows 60 to 100 feet tall and has a thick trunk, smooth gray bark, a spreading head with massive branches, small pinnate leaves, and inconspicuous greenish flowers. The latter are followed by pods or 'beans,' which, when ripe, are black, 6 to 14 inches long and three-fourths of an inch to 1½ inches wide. These pods are broken up and are in general use for ordinary laundry work, producing a good lather in either hot or cold water. They are also used in the process of tanning hides. The saponaceous fat is contained in the pod itself, which is the only part utilized, the hard, flattened brown seeds being discarded." (Wilson, *A Naturalist in Western China*, vol. 2, p. 71.)

For previous introduction, see S. P. I. No. 45803.

50639 and 50640. *HELIANTHUS ANNUUS* L. Asteraceæ. Sunflower.

50639. "Black seeded." 50640. "White seeded."

50641. *JUGLANS REGIA* L. Juglandaceæ. Walnut.

"From Pochow, Anhwei, China."

50642. *KOELREUTERIA APICULATA* Rehd. and Wils. Sapindaceæ.

A tree, 3 to 12 meters high, with a dense, spreading head and dark-gray bark-bearing bipinnate leaves, 18 to 35 centimeters long, and erect terminal many-flowered panicles of yellow flowers which are sometimes used to make a yellow dye for cotton cloth and silk fabrics. Native to China. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 2, p. 191.)

50643. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"Castor beans."

50644. *SPINACIA OLERACEA* L. Chenopodiaceæ. Spinach.

"Chinese early long leaf."

50645. *STILLINGIA SEBIFERA* (L.) Michx. Euphorbiaceæ.

"A long-lived tree, 40 to 50 feet high, which occurs in all the warmer parts of China and is remarkable for the beautiful autumnal tints of its foliage. It yields the valuable Chinese vegetable tallow of commerce. In Hupeh, where

50635 to 50647—Continued.

the industry is well looked after, the larger branches are kept 'headed in' to facilitate the gathering of the fruits. The fruits are three celled, flattened ovoid, and about 1.5 centimeters in diameter. When ripe they are blackish brown and woody in appearance and are either gathered from the trees by hand or knocked off by the aid of bamboo poles. After being collected, the fruits are spread in the sun, where they open, and each liberates three elliptical seeds which are covered with a white substance. This covering is a fat or tallow and is removed by steaming and rubbing through a bamboo sieve having meshes sufficiently small to retain the black seeds. The fat is collected and melted; afterwards it is molded into cakes, in which state it is known as the 'pi-yu' of commerce. After the fatty covering has been removed the seeds are crushed and the powdered mass is subjected to partial roasting in shallow pans. Then it is placed in wooden vats, fitted with wicker bottoms, and thoroughly steamed over boiling water. Next, with the aid of an iron ring and straw, it is made into circular cakes about 18 inches in diameter. These cakes are arranged edgewise in a large press, and, when full, pressure is exerted by driving in one wedge after another, thereby crushing out the oil, which falls into a vat below. The oil expressed from the seeds is the 'ting-yu' of commerce. Very often no attempt is made to separate the fat and the oil. The seeds with their white covering are crushed and steamed together and submitted to pressure, the mixed product so obtained being known as 'mou-yu.' The yield of fat and oil is about 30 per cent by weight of the seeds. In China all three products are largely employed in the manufacture of candles. The pure 'pi-yu' has a higher melting point than the 'ting-yu' or the mixture 'mou-yu.' All Chinese candles have an exterior coating of insect white wax, but when made from 'pi-yu' only the thinnest possible covering of wax is necessary (one-tenth of an ounce to a pound). All three products of the vegetable-tallow tree are exported in quantity to Europe, where they are used in the manufacture of soap, being essential constituents of certain particular forms of this article." (Wilson, *A Naturalist in Western China*, vol. 2, p. 68.)

For previous introduction, see S. P. I. No. 47363.

50646. *THEA SASANQUA* (Thunb.) Nois. Theaceæ.
(*Camelia sasanqua* Thunb.)

A large, wide-spreading ornamental shrub or small tree common throughout the warmer parts of Japan. The branches are very slender, and in the wild plant the flowers are always white. It is a popular garden shrub, and under cultivation forms with pink and rose-colored flowers are common. The seeds contain an inferior sort of oil used by the Japanese women for dressing their hair. (Adapted from Sargent, *Plantæ Wilsonianæ*, vol. 2, p. 394.)

For previous introduction, see S. P. I. No. 35248.

50647. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.
(*Cedrela sinensis* Juss.)

A tree 80 feet high with a straight trunk, common in western Hupeh up to 4,500 feet. The young shoots are cooked and eaten as a vegetable. The valuable wood is beautifully marked with rich-red bands on a yellow-brown ground. Foreigners call it "*Chinese mahogany*." It is easily worked, does not warp or crack, and is esteemed for making window sashes, door joists, and furniture. (Adapted from Wilson, *A Naturalist in Western China*, vol. 2, p. 22.)

For previous introduction, see S. P. I. No. 38805.

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U. S. DEPARTMENT OF AGRICULTURE.
BUREAU OF PLANT INDUSTRY.

INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM JUNE 1
TO SEPTEMBER 30, 1920.

(No. 64: Nos. 50648 to 51357.)



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INVENTORY OF SEEDS AND PLANTS IMPORTED BY THE OFFICE OF FOREIGN SEED AND PLANT INTRO- DUCTION DURING THE PERIOD FROM JUNE 1 TO SEPTEMBER 30, 1920 (NO. 64; NOS. 50648 TO 51357).

INTRODUCTORY STATEMENT.

During the period covered by this inventory three agricultural explorers were in the field for the Bureau of Plant Industry. Wilson Popenoe finished his plant hunting in Guatemala and Costa Rica, and after a brief stay in the Canal Zone, commenced work in the Colombian highlands. Dr. H. L. Shantz was making his way through British East Africa, preparatory to coming down the Nile. Joseph F. Rock, who has joined the force of this office and has become an agricultural explorer for it, was on his way to Siam and Burma to search for seeds of the tree which yields the chaulmoogra oil that has proved so successful in the treatment of leprosy.

Mr. Rock sent in from the island of Oahu (Territory of Hawaii) a showy tree hibiscus (*Hibiscus brackenridgei*, No. 50693), bearing yellow flowers 6 inches across.

From Guatemala Mr. Popenoe sent in the zacate blanco (*Ixophorus unisetus*, No. 50650), one of the best native forage grasses for moist places such as the Everglades. From the region around El Barranquillo, Guatemala, which is exceedingly dry for a large part of the year, he sent a collection of flowering trees and shrubs which should find a home in southern Florida and California.

Mr. Popenoe also obtained seeds of a rare species of *Persea* (*P. caerulea*, No. 51032), related to the avocado, which bears racemes of black fruits the size of large peas. Whether or not this has value as a stock for the avocado remains to be seen. Certainly the avocado industry is becoming of such importance as to warrant the assembling of all the species of the genus *Persea*, to which the avocado belongs, preparatory to a systematic study of their possibilities for breeding purposes.

The pejihaye palm (*Guilielma utilis*), a very ancient food plant of Costa Rica, Mr. Popenoe thinks is remarkably promising. It

is a slender palm which bears as much as 125 pounds of dry meal fruits that, when boiled in salted water, resemble chestnuts in texture and flavor. It bears in 6 to 8 years, lives to be 50 years old, is the favorite vegetable fruit of the Costa Ricans, and a most important commercial product. Every attempt should be made, Mr. Popenoe thinks, to cultivate this in western Florida, where it may succeed. His discovery of seedless forms (Nos. 51091 and 51092) in Costa Rica is worthy of special mention; and we wish to record here our appreciation of the gifts of offshoots of these palms by Doña Amparo de Zeledón and by Alfredo Brade, as also the assistance rendered by Mr. Popenoe, during his stay in Costa Rica, by Otón Jiménez, an active young botanist of San José.

From Zanzibar in June, 1920, Doctor Shantz shipped a most remarkable collection of 241 introductions (Nos. 50726 to 50966) obtained by him in the region of Nyanza, Lake Tanganyika, Dar es Salaam, Urundi, and Ujiji. These represent, in the main, varieties of the grain and vegetable crops of the native agricultural tribes of this interesting region, and out of the collection can hardly fail to come strains of sorghum, beans, corn, or other plants which, through breeding, will add to our own American varieties of these crops such characters as resistance to drought or disease.

The dahlia has become of such importance to our horticulture and there are so many breeders of it that a collection of tree dahlia (*Dahlia* spp., Nos. 51086 to 51090) from Costa Rica can scarcely fail to be of interest as material for breeding purposes.

Mr. Popenoe's wild raspberry (*Rubus eriocarpus*, No. 51094) from 10,000 feet altitude on the slopes of the Volcano Irazu may prove of value to breeders.

Ideal street trees are an asset to any country, and Mr. Popenoe, in getting seeds of the muñeco (*Cordia nitida*, No. 51118) of Costa Rica, may have introduced a valuable one for southern Florida.

The tacaco (*Polakowskia tacaco*, No. 51122), like the chayote of Guatemala, is a favorite vegetable among Costa Ricans and according to Mr. Popenoe deserves to be improved by selection.

From the well-known collector, Carlos Wercklé, Mr. Popenoe procured a new fruit tree of the genus *Coccolobis* (No. 50683) and an as yet undetermined fruit tree (No. 50692) which he thinks may be a new genus; both have tart edible fruits of some promise.

The new and handsome shrub (*Wercklea insignis*, Nos. 51124 and 51125), named for Mr. Wercklé and having bright-lilac flowers resembling in size and form the well-known *Hibiscus rosa-sinensis*, may grow in California and Florida and become popular.

From Bogota, Colombia, Mr. Popenoe sends a wild blackberry (*Rubus urticaefolius*, No. 51354), from an altitude of 5,000 feet, and *Erythrina edulis* (No. 51357), the seeds of which furnish an impor-

tant article of food on the western slopes of the Cordillera Oriental. These seeds are sometimes 2 inches long and when cooked are more agreeable in flavor and more delicate than the ordinary bean.

So little has been done in the way of selecting superior seedlings of the tropical fruits that Mr. Popenoe's discovery of a variety of the soursop (*Annona muricata*, No. 51050), which is more productive than the ordinary seedling and has unusually handsome fruits, will interest tropical horticulturists generally.

J. A. Hamilton, of Cairns, northern Queensland, Australia, believes his new Improved Dwarf Lima bean (*Phaseolus lunatus*, No. 50999) is better adapted to subtropical regions than Burpee's Bush Lima.

Dr. Proschowsky, of Nice, France, sends in *Alectryon subcinereum* (No. 51000), a relative of the lychee; he suggests that it may prove a good stock for that valuable Chinese fruit tree.

Mr. Macmillan sends in seeds of the giant bamboo (*Dendrocalamus giganteus*, No. 51026) of the Malay Peninsula, which grows more than 100 feet tall and 30 inches in circumference. As it seeds very infrequently, this variety should now be given a thorough trial in southern Florida.

Mr. Poynton, of Auckland, New Zealand, presents seeds of the pohutukawa tree (*Metrosideros tomentosa*, No. 51048) which grows on the shores of the North Island. Its thick evergreen leaves withstand salt spray remarkably well, and in the New Zealand summer the plant is covered with a profusion of scarlet blossoms. It should be useful on the shores of California.

There is something peculiarly romantic in Mr. Poynton's story of how the beautiful puka tree (*Meryta sinclairii*, No. 51049) of New Zealand was saved, after it had become so nearly extinct that there remained only 27 plants of it on some small islands in the Hauraki Gulf; all the trees now planted in the parks and gardens of that country came from cuttings of these specimens. It has the largest leaves of any plant in New Zealand.

Ornamental-berried house plants which will keep their freshness and their show of fruits for a long time are not common, and Mr. Johnson may have found a new one in his as yet undetermined species of *Ardisia* (No. 51052) from Alta Vera Paz, Guatemala. Mr. Johnson's introduction of two new species of the true pepper (Nos. 51059 and 51060), which have a slightly different flavor from that of the commercial species, *P. nigrum*, may have some economic importance for tropical horticulture.

The passifloras, or passion fruits, form a fascinating field for the plant breeder, and it is hard to understand why no one has studied them, especially since there are forms like *Passiflora macrocarpa*

(No. 51099) which bear delicious-flavored fruits the size of a man's head.

A new lawn grass (*Aeluropus brevifolius*, No. 51110) for alkaline soils will interest a wide circle of those who live in the Southwest some of whom doubtless know its sender, Dr. R. H. Forbes, who lived in Arizona for many years before he went to Egypt.

A wild species of tulip (*Tulipa stellata*, No. 51113) from Punjab India, with pure-white petals and bulbs which are frequently eaten by the East Indians, may interest the bulb growers and hybridizers.

Crotalarias appear to be excellent nitrogen gatherers in the sandy soils of Florida, and a new one (*Crotalaria verrucosa*, No. 51119) from Puntarenas, Costa Rica, is worthy of a fair trial.

The pandan has become so thoroughly at home in Florida that many horticulturists will be glad to try the four species (*Pandanus* spp., Nos. 51135 to 51138) sent in from Buitenzorg by the Java Department of Agriculture.

The accoub of Syria (*Gundelia tournefortii*, No. 51142) appears to be a promising new vegetable. It is a perennial spiny composite similar to the globe artichoke but said to be superior to it.

The accounts of the mowra tree of India (*Madhuca indica*, No. 51155) are so remarkable that efforts ought to be made to establish this species on the dry waste lands of Florida, where its unusually sweet, edible blossoms could be utilized for alcohol manufacture. Single trees have been known to yield 300 pounds of flowers which yield from 40 to 70 per cent of invert and cane sugar mixed.

A collection of Wright's new peaches and apples (Nos. 51162 to 51179) from Auckland, New Zealand, including the Alpha apple which he considers the earliest of all apples, will interest breeders of these fruits.

Wester sends in a new green-leaved vegetable for the South in his *Talinum* (No. 51193) a relative of purslane, which he reports makes an excellent dish for the table.

Bischofia trifoliata (No. 51194), the Javanese timber and shade tree, is proving such a beautiful thing in southern Florida that distribution of it as a street tree is contemplated.

Eugenia curranii (No. 51201) from the Philippine Islands, according to Wester, bears immense quantities of fruits suitable for preserves.

The leaves and stems of a form of *Chenopodium album* (No. 51214), which is closely related to our own lamb's-quarters, according to Mr. Carter, of Calcutta, are used as greens in India, and the seeds are eaten as a cereal. The hill tribes of the western Himalayas cultivate this species as one of their principal crops.

Doctor Shantz finds the ati grass (*Heteropogon contortus*, No. 51226) of the region about Nairobi to be an excellent forage grass.

and recommends it for Arizona, New Mexico, and the pinelands of Florida. His hedge plant (*Coleus barbatus*, No. 51239), producing masses of sky-blue flowers, will be a desirable novelty if it proves hardy.

O. F. Cook has pointed out that we have in the driest desert region of California a leguminous tree (*Olneya tesota*, No. 51254), the beans of which when roasted resemble peanuts. These *Olneya* trees, as they are called, are among the most attractive trees of our Southwest. They deserve trial in other desert regions of the world.

The iburu (*Digitaria iburua*, No. 51257), a cereal grown by the natives of Northern Nigeria and producing a small, pure-white grain, is already under observation by Mr. Piper, who considers it worth while from the standpoint of a forage crop.

Perhaps the macui (*Solanum* sp., No. 51265) which Mr. Johnson finds in use among the Kekchi Indians of Alta Vera Paz, Guatemala, may be what we are looking for as a summer green vegetable for the South. He says the tender young tips are widely used and have an excellent flavor.

The fufu grass (*Pennisetum purpureum*, No. 51286), of Rhodesia, is found by Mr. Holland, of Port Elizabeth, South Africa, to be softer, sweeter, and more succulent than Napier grass, and this forage crop may prove superior to the latter in our Southern States.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by H. C. Skeels, and the descriptive and botanical notes have been arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript of this inventory has been prepared by Miss Esther A. Celander and Miss Patty T. Newbold.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., January 13, 1922.

INVENTORY.¹

50648. SCHIZOSTACHYUM sp. Poaceæ.

Bamboo.

From Buitenzorg, Java. Plants presented by Dr. J. C. Koningsberger, director, Java Botanic Garden, through K. Heyne, Department of Agriculture. Received June 8, 1920.

Late in 1915 L. C. Westenenk, a resident of Benkulen, Sumatra, while on a trip through the highlands of Kroe, found this solid-stemmed bamboo. Material was sent to the garden of the Museum of Economic Botany, in Buitenzorg, where it grew abundantly, flowered, and fruited. This bamboo forms a thick stand about 7 meters (24 feet) high; the green stems are 3 centimeters (more than an inch) thick, with joints about 25 centimeters (10 inches) long. (Adapted from *Teysmannia*, vol. 30, p. 846.)

50649 to 50651.

From the city of Guatemala, Guatemala. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 8, 1920. Quoted notes by Mr. Popenoe.

50649. ANANAS SATIVUS Schult. f. Bromeliaceæ.

Pineapple.

"(No. 373.) Suckers of the *Montufar* pineapple, a variety grown in the lower Motagua Valley, notably at the station of Montufar, whence the name. The plants forwarded under this number were obtained from the grounds of the United Fruit Co. hospital at Quirigua.

"The plant is large and has slender, finely serrate leaves, not noticeably recurved. The fruits may be termed medium to large in size, being commonly 6 to 8 inches in length and oblong in form. The lines marking the carpellary divisions are not deeply incised, and the eyes, therefore, are not prominent. The surface is dull yellow in color, more commonly greenish yellow, because the fruits are not left on the plant until fully ripe. The flesh is light yellow, very juicy, with abundant aroma and rich flavor. It is not so delicately flavored nor so sweet as the *Smooth Cayenne*, but impresses me as considerably better than the *Red Spanish*. The variety is one which I have not seen elsewhere. It is forwarded for trial in connection with the Hawaiian experiments."

For previous introduction, see S. P. I. 49370.

¹ It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction; and further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories, in many cases, will undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

50649 to 50651—Continued.

50650. *IXOPHORUS UNISSETUS* (Presl) Schlecht. Poaceæ. Grass.

"(No. 372a.) *Zacate blanco*. Seeds of a native grass from Quirigua in the lower Motagua Valley. Altitude, 250 feet.

"This is considered one of the best native forage grasses of its region. Its leaves, which are succulent and about half an inch wide reach a height of about 2 feet. The plant seems to thrive in moist places and is worth testing in the Everglades region of southern Florida."

50651. *PINUS OCCARPA* Scheide. Pinaceæ. Pine.

"(No. 371a. Herb. No. 975.) From the Finca Moca, San Francisco Miramar, Patulul. Altitude about 3,200 feet. Seeds of a white pine, abundant on the lower slopes of the Volcano Atitlan. It yields good lumber and is cut for this purpose."

50652 to 50678.

From the city of Guatemala, Guatemala. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 8, 1920. Quoted notes by Mr. Popenoe.

"(Nos. 345a to 370a. April 23, 1920.) The following have been collected at El Barranquillo. Many of these species I have seen in bloom and consider promising. Some of the others I have taken upon the recommendation of Fernando Carrera, who has collected the seeds.

"The region from which they come is exceedingly dry for a large part of the year, but is never cold; it does not seem certain, therefore, that these plants will stand the cold winters of California and Arizona, though they should be adapted to resist the dry atmosphere. It seems likely that most of them will succeed in southern Florida."

50652. *ALVARADOA AMORPHOIDES* Liebm. Simaroubaceæ.

"(No. 355a. Herb. No. 956.) *Plumajillo*. Described as a tree about 25 feet high, which produces an abundance of white flowers in January."

50653. *CAESALPINIA EXOSTEMMA* Moc. and Sesse. Cæsalpiniaceæ.

"(No. 350a. Herb. No. 974.) *Carcomo*. A leguminous shrub, reaching about 10 feet in height and producing terminal racemes of flowers somewhat resembling those of *Caesalpinia pulcherrima*, particularly in color, which is a combination of yellow and light orange-scarlet."

50654. *CASSIA BICAPSULARIS* L. Cæsalpiniaceæ.

"(No. 361a. Herb. No. 969.) *Cola de pato*. Described as a small tree which produces yellow flowers in March."

For previous introduction, see S. P. I. 44123.

50655. *CASSIA EMARGINATA* L. Cæsalpiniaceæ.

"(No. 362a. Herb. No. 959.) *Vainillo*. Described as a medium-sized tree which produces yellow flowers in March."

50656. *CYDISTA PUBESCENS* Blake. Bignoniaceæ.

"(No. 368a. Herb. No. 980.) *Campana*. Described as a vigorous climber which produces handsome pink flowers."

50657. *EUPHORBIA LEUCOCEPHALA* Lotsky. Euphorbiaceæ.

"(No. 359a.) *Flor de pascua*. Described as a small tree bearing white flowers at Christmas time (hence the name *flor de pascua*, or Christmas flower). Said to be particularly handsome."

50652 to 50678—Continued.

50658. *MACROSCEPIS OBOVATA* H. B. K. Asclepiadaceæ.

"(No. 336a. Herb. No. 970.) *Chununo*. Described as a climbing plant which produces reddish purple flowers in January."

50659. *GUAIACUM GUATEMALENSE* Planch. Zygophyllaceæ.

"(No. 364a. Herb. No. 952.) *Guayacan*. The Guatemalan *lignum-vitæ*, a small tree which is covered in February or March with lavender-blue flowers."

For previous introduction, see S. P. I. No. 47900.

50660. *HAEMATOKYLUM BRASILETTO* Karst. Cæsalpiniaceæ.

"(No. 348a. Herb. No. 936.) *Brazil*. A handsome flowering tree. It grows to about 15 feet in height, is spreading in habit, and during the early spring is covered with small yellow flowers."

For previous introduction, see S. P. I. No. 44456.

50661. *IPOMOEA* sp. Convolvulaceæ.

Morning-glory.

"(No. 360a.) *Bejuco blanco*. A climber, said to produce large white flowers in December."

50662. *JACQUINIA GRACILIS* Mez. Theophrastaceæ.

"(No. 356a. Herb. No. 957.) *Duruche*. Described as a small tree, producing in January many fragrant yellow flowers."

50663. *JACQUINIA GRACILIS* Mez. Theophrastaceæ.

"(No. 356a.) *Duruche*. Described as a small tree, producing in January many fragrant yellow flowers."

50664. *MAXIMILIANEA VITIFOLIA* (Willd.) Krug and Urb. Cochlosperm-
(*Cochlospermum hibiscoides* Kunth.) [aceæ.

"(No. 346a.) *Tecomasuche*. A handsome plant, first introduced from Guatemala in 1917; but it has seemed worth while to obtain additional seed. In habit it is a small tree, with long, stiff unbranched growths from the main trunk, terminating in clusters of leaves which fall during the dry season and are replaced by clusters of flowers of the form and color of large California poppies (*Eschscholtzia californica*)."

For previous introduction, see S. P. I. 44821.

50665. *PETREA ARBOREA* H. B. K. Verbenaceæ.

"(No. 365a. Herb. No. 954.) *Cuero de zapo*. This is one of the finest flowering climbers of the Tropics. It is occasionally seen in southern Florida gardens, but is deserving of much wider cultivation in that region than it enjoys at present. It is a vigorous climber, with oblong leaves about 4 inches in length and harsh to the touch, and trusses of star-shaped flowers of sky-blue color. It blooms more or less throughout the year, but is fairly covered with flowers in the early spring."

For previous introduction, see S. P. I. No. 49031.

50666. *PHYLLOCARPUS SEPTENTRIONALIS* Donn. Smith. Cæsalpiniaceæ.

"(No. 345a.) *Flor de mico* (monkey flower). From El Barranquillo, Department of El Progreso, altitude about 1,800 feet. This unusually handsome flowering tree was introduced in 1917, but at that time only

50652 to 50678—Continued.

a small quantity of seed could be obtained. I have, therefore, obtained an additional supply, so that the species can be given a wide trial in the Tropics and Subtropics."

For previous introduction, see S. P. I. No. 44775.

50667. *PLOCOSPERMA BUXIFOLIUM* Benth. Loganiaceæ.

"(No. 357a. Herb. No. 972.) *Barreto*. Described as a small tree, reaching about 20 feet in height and producing in April small purple flowers."

50668. *PLUMERIA ACUTIFOLIA* Poir. Apocynaceæ.

"(No. 354a.) *Palo de la Cruz*. Known in English as frangipani, the source of the perfume of the same name. A stiff, erect, small tree, reaching about 25 feet in height, the branches naked except for clusters of leaves at the summit of each, where also appear in early spring clusters of single white, star-shaped flowers of delicious fragrance. This species is probably already known in Florida, as several plumerias are grown there to a limited extent; but it deserves much wider dissemination than has yet been given it in that State."

50669. *PODOPTERUS GUATEMALENSIS* Blake. Polygonaceæ.

"(No. 349a. Herb. No. 973.) *Cruzito*. A small tree or large shrub, which produces in February and March a profusion of small white flowers of peculiar form. A curious and beautiful plant."

50670. *SAPINDUS SAPONARIA* L. Sapindaceæ.

"(No. 352a.) *Jaboncillo*. One of the soapberries. See S. P. I. No. 49781 [324a]."

50671. *SECURIDACA SYLVESTRIS* Schlecht. Polygalaceæ.

"(No. 347a. Herb. No. 964.) *Choreque*. A vigorous climber, producing trusses of reddish purple flowers. A handsome thing."

50672. *STIGMAPHYLLON* sp. Malpighiaceæ.

"(No. 351a.) *Coralillo*. Said to be a red-flowered climbing plant. I am not familiar with it."

50673. *TABEBUIA* sp. Bignoniaceæ.

"(No. 366a.) *Cacho de chibo*. Described as a medium-sized tree producing small white flowers in January."

50674. *VERNONIA PATENS* H. B. K. Asteraceæ.

"(No. 358a. Herb. No. 960.) *Suquinay*. Described as an arborescent shrub, about 10 feet high, bearing many small white flowers about the first of March."

50675. (Undetermined.)

"(No. 369a.) *Granadillo*. Described as a medium-sized tree which produces in December an abundance of small white flowers."

50676. *SIMAROUBA GLAUCA* DC. Simaroubaceæ.

"(No. 353a. Herb. No. 982.) *Jocote mico*. Described as a small tree which produces attractive flowers followed by terminal racemes of plum-like fruits said to be edible."

50677. *KARWINSKIA* sp. Rhamnaceæ.

"(No. 370a.) *Manzanito*. Described as a medium-sized tree which produces small white flowers in January."

50652 to 50678—Continued.

50678. *ASCLEPIAS CURASSAVICA* L. Asclepiadaceæ.

"(No. 367a.) *Viborana*. Described as a small tree which produces small red flowers in March."

50679 to 50681.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 26, 1920. Quoted notes by Mr. Popenoe.

50679. *GUILIELMA UTILIS* Oerst. Phœnicaceæ.

Palm.

(*Bactris utilis* Benth. and Hook.)

"(No. 391a. June 7, 1920.) *Pejibaye palm*. Seed of a remarkable food plant, of ancient cultivation in Costa Rica, and certainly deserving of wide dissemination in the Tropics. Pittier says: 'The Indians [of Costa Rica] have cultivated it since a remote period, and it is not now known in the wild state.' And Gagini quotes Alcedo to the effect that the fruit is almost the only food of the Guaimies and the Indians of southern Talamanca, in this country. It is to-day grown commercially in the vicinity of Tucurrique, on the Atlantic side, and is also known on the Pacific side, though not so abundant there. In the markets of San Jose the fruit is always in great demand and fetches a high price. The name is sometimes written *pejivalle*, *pjivay*, and *pixbay*; it is pronounced pe-he-vy-e, with the e's short.

"The palm is a beautiful pinnate-leaved species, with a slender trunk reaching to 50 feet, though commonly not more than 35 feet. The leaves resemble those of *Cocos plumosa* and other palms of that type, while the trunk is armed from top to bottom with thin, sharp spines about 2 inches long. Flowers are produced in spring, from March to June (occasionally at other times of the year), and are followed by stout racemes of fruit which matures principally in the autumn. The racemes sometimes weigh 25 pounds, and as many as five or six are produced by the palm in a single crop. The individual fruits are top shaped, up to 2 inches long, yellow to deep orange, with a thin skin, and a hard seed in the center surrounded by abundant flesh of orange or yellow color, firm texture, and dry, farinaceous character. Seedless varieties are known, and since these can be propagated, like date palms, by means of offshoots, of which the plant produces several in the course of its life, the establishment of superior forms should be simple.

"The *pejibaye*, which is one of the most popular of all Costa Rican fruits (though it should not, perhaps, be called a fruit, except in the botanical sense), is prepared for eating by boiling it for three hours in salted water, after which the skin is pared off with a knife, and the flesh, which strikingly resembles boiled chestnuts in appearance and flavor, is eaten without seasoning of any sort. Doubtless the fruit would lend itself to many uses, such as stuffing for fowl, but it is so good in its simple form that Costa Ricans have not sought to improve it by bringing it under the influence of the culinary art.

"The palm is said to come into bearing at 6 to 8 years from seed, and to live at least 50 years. It is found in Costa Rica from sea level up to 5,000 feet elevation, but in extremely wet regions above 4,000 feet some of the palms do not bear. The ideal region for it seems

50679 to 50681—Continued.

to be, in this country, between 2,000 and 3,000 or 3,500 feet and where the rainfall is not great. It does not appear to be particular as regards soil.

"The fruit contains about 40 per cent of carbohydrates, and according to an analysis made in San Jose, one pound of the flesh represents 1,096 calories of energy, which entitles the pejobaye to serious consideration as a food plant. All in all, it seems to me that it should be widely planted in tropical regions. In the United States, it may perhaps succeed in southern Florida, but the climate of California is probably too cool for it."

For previous introduction, see S. P. I. No. 44268.

50680. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(*P. gratissima* Gaertn. f.)

"(Nos. 382 and 395. May 27, 1920, and June 9, 1920. Cuttings of Avocado No. 42, from the residence of Margarita Muñoz, 4a Avenida Este and 5a Calle Sur, San Jose.) This avocado was called to my attention by Don Anastasio Alfaro, Director of the National Museum. He recommends it as one of the finest known to him, and a variety of unusually late ripening season. The parent tree, which stands in a small back yard, about 10 feet from a house, is 30 feet high, slender in form, with a straight trunk 15 inches thick at the base, branched 8 feet above the ground. At this time (June, 1920) the fruits are not half grown, but judging by their present appearance and a plaster of Paris model made last year by Sr. Alfaro, it is possible to say that the form is oval to broad pyriform and that it is up to one pound in weight. The color is said to be green, the seed not unreasonably large, and the flesh of excellent quality. The season of ripening is September to November, sometimes to December. Most of the avocados in this region ripen in August and September. The tree is a heavy bearer, the fruits sometimes being produced in clusters of two or three."

50681. *RUBUS* sp. Rosaceæ.

Blackberry.

"(No. 390a. June 7, 1920.) A wild blackberry which occurs in the vicinity of San Jose. The seeds sent under this number are from fruits purchased in the market. This species produces fruits about an inch long, in form and general character resembling the cultivated blackberries of the North. The quality is fairly good, though the flavor is a trifle too acid. Of interest principally to those engaged in breeding new forms of blackberries."

50682 to 50685.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 15, 1920. Quoted notes by Mr. Popenoe.

50682. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ.

Chayote.

(*Sechium edule* Swartz.)

"(No. 380a. May 27, 1920.) A good variety of chayote from the San Jose market. The fruits are broadly obovoid in form, nearly round, about 3 inches long, and waxy white. There are a few short spines on the surface."

50682 to 50685—Continued.

50683. *COCCOLOBIS* sp. Polygonaceæ.

"(No. 376. May 27, 1920.) Plants presented by Carlos Wercklé, El Coyolar, Costa Rica. Mr. Wercklé described this as a small tree, ever-green, much branched, and handsome in appearance. It produces blue-black fruits the size of small plums, with juicy flesh of acid, somewhat astringent flavor, good for making jellies and preserves and also for eating out of hand when of a good variety. The single stone is rather large. This plant may succeed in southern Florida. It is from the lowlands of Costa Rica and hence tropical in its requirements."

50684. *MARANTA* sp. Marantaceæ.

"(No. 377. May 27, 1920.) *Lairen*. Roots presented by Carlos Wercklé, El Coyolar, Costa Rica. A plant allied to arrowroot and greatly resembling it in appearance. It yields large numbers of plump tubers, 2 to 4 inches long. These contain much starch, and can be eaten when boiled, though they never become soft or mealy. Mr. Wercklé thinks the species may be of value as a source of starch because of the large quantity of tubers which each plant produces."

50685. *NECTANDRA GLABRESCENS* Benth. Lauraceæ.

"(No. 379a. Seed from Rancho Redondo, near San Jose, elevation about 1,500 meters. May 27, 1920.) A round-topped tree growing to about 40 feet, and producing fruits which look like small avocados of the Mexican race. They are obovoid in form, nearly 2 inches long, with a thin black skin and yellow flesh of oily texture and strong aniselike taste which makes them inedible. Of interest as a possible stock plant for the avocado."

50686 and 50687.

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderyst. Received June 29, 1920.

50686. *ANDROPOGON* sp. Poaceæ. Grass.

Numbered for convenience in testing by the Office of Forage-Crop Investigations.

50687. *BRACHIARIA BRIZANTHIA* (Hochst.) Stapf. Poaceæ. Grass.
(*Panicum brizanthum* Hochst.)

"A tall grass, especially on the higher land. It is very abundant on the uplands and forms a large part of the great grass cover of this grassland country." (Shantz.)

For previous introduction, see S. P. I. No. 49687.

50688. *PERSEA AMERICANA* Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn f.)

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 15, 1920.

"(No. 485.)" (Popenoe.)

50689 and 50690.

From Kisantu, Belgian Kongo. Seeds presented by Father H. Vanderyst
Received July 29, 1920.

50689. CHAETOCLOA sp. Poaceæ. Grass

Numbered for convenience in testing by the Office of Forage-Crop Investigations.

59690. CHAETOCLOA LUTESCENS (Weigel) Stuntz. Poaceæ. Grass

Numbered for convenience in testing by the Office of Forage-Crop Investigations.

50691 and 50692.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received June 15, 1920. Quoted notes by Mr. Popenoe.

50691. RUBUS GLAUCUS Benth. Rosaceæ. Andes berry

"(No. 378a. Seed from Rancho Redondo, near San Jose. May 27, 1920. Herb. No. 988.) *Mora de Castilla*. This is either the same species sent from northern Guatemala under the name of *tokan-uuk*, or one of very similar character. The plant resembles the *tokan-uuk* very closely, and the fruit is of the same size and form but lighter in color being of a light-red shade. It has a delicious aroma, suggesting strawberry berries. The fruit is oblong or somewhat ovate, up to an inch in length, very plump, soft and juicy when ripe. Several species of *Rubus* are given the common name *mora de Castilla*: this is used to indicate, in fact, any *Rubus* that produces good fruits of blackberry or raspberry character."

For previous introduction, see S. P. I. No. 49387.

50692. (Undetermined.)

"(No. 375a. May 27, 1920.) *Fruta de pava*. Plants presented by Carlos Wercklé, of El Coyolar, Costa Rica. A large tree native to this region. Mr. Wercklé believes it is a new species, perhaps representing a genus not yet described botanically. The fruit is about an inch long, shining black, with dark-purple flesh inclosing a single elongated stone. The flavor is agreeable, not sour but sometimes astringent. The young fruits are yellow, later turning red, then black. It is from the lowlands and likely to succeed in the United States only in southern Florida."

50693. HIBISCUS BRACKENRIDGEI A. Gray. Malvaceæ.

From Honolulu, Hawaii. Seed presented by J. F. Rock. Received June 30, 1920.

"A striking and well-marked rather rare species with a shrubby erect stem, 4 to 5 feet high, stiff spreading branches, and rather stout, very leafy flowering stalks. It is worthy of cultivation on account of its showy yellow flowers. The smooth, bright-green leaves on long petioles are rounded in outline, $3\frac{1}{2}$ to 4 inches in diameter and 5 to 7-lobed, somewhat resembling those of the common grapevine. The spreading yellow corolla is about 6 inches across. Found in the scrub vegetation of the leeward side of Oahu, East and West Maui, and Lanai." (Rock.)

A wild shrub of this species and a single flower are shown in Plates I and II.



A NEW AND BRILLIANT HAWAIIAN HIBISCUS. (*HIBISCUS BRACKENRIDGEI* A. GRAY, S. P. I. No. 50693.)

This extremely rare species of Hibiscus, which Mr. Rock found growing among the stones at the base of a cliff on the windward side of the island of Oahu, is a thing of rare beauty when covered with its large yellow flowers. Since it grows under arid and rather severe conditions it may be found useful as an ornamental plant in some parts of tropical America which, because of unfavorable climate and soil, are not well suited to the cultivation of many of the common tropical ornamentals. (Photographed by J. F. Rock, Oahu, Hawaii, March, 1918; P27003FS.)



A HAWAIIAN HIBISCUS THAT SHOULD BE WIDELY CULTIVATED. (HIBISCUS BRACKENRIDGEI A. GRAY, S. P. I. NO. 50693.)

The deep canary-yellow flowers of this exceedingly rare Hibiscus are 6 inches across. Only a few wild plants are in existence (one is shown in Plate I), and the species seems not to have found its way into American horticulture, although Hillebrand called attention to the possibilities of its culture more than 30 years ago. (Photographed by J. F. Rock, Oahu, Hawaii, March, 1918; P27004FS.)

50694 to 50709.

From Honolulu, Hawaii. Seeds presented by Dr. H. L. Lyon, Department of Botany and Forestry. Collected by A. Schwarz near Tjibodas, Java. Received June 29, 1920. Quoted notes by Mr. Schwarz.

50694. *ALBIZZIA MONTANA* (Jungh.) Benth. Mimosaceæ.

A shrub or small tree with spreading branches and oblong-linear silky pubescent or glabrous leaflets. The flowers are on very short pedicels in cylindrical spikes. The somewhat falcate pods contain brownish black seeds. Native to Java. (Adapted from *Valeton, Boomsoorten van Java*, vol. 1, p. 295.)

50695. *ALTINGIA EXCELSA* Noronha. Hamamelidaceæ.

"A magnificent tree of the tropical evergreen forests of the Indian Archipelago and northeastern India. In Java it yields in small quantity an odorous medicinal resin known in Europe as storax, which is obtained by incisions in the trunk; the tree is not regularly cultivated. The soft reddish gray wood with lighter streaks is used in Assam for building and ordinary domestic purposes." (*Watt, Dictionary of the Economic Products of India*, vol. 1, p. 201.)

50696. *ELAEOCARPUS SPHAERICUS* (Gaertn.) Schum. Elæocarpaceæ.
(*E. ganitrus* Roxb.)

"*Djianitu*."

A large tree found in Nepal, Assam, and the Konkan Ghats. The hard-grooved and elegantly tubercled nuts are polished and made into rosaries and bracelets. They are frequently set in gold and are often imported from Singapore, where the tree is common. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 3, p. 205.)

50697. *FICUS NOTA* (Blanco) Merr. Moraceæ.

Fig.

A medium-sized tree with broadly ovate leaves 15 to 25 centimeters long, more or less pubescent; numerous green or purplish, pear-shaped receptacles, 3 centimeters in diameter, are borne in masses on specialized leafless branches from the trunk and larger branches. This tree is common in the Philippine forests both in the lowlands and in the hills, reaching a height of 8 to 10 meters. The abundant milky sap when coagulated is similar in appearance and physical characteristics to the gum of *Achras zapota* (the gum chicle of commerce) which is used in the manufacture of chewing gum. (Adapted from *Merrill, New or Noteworthy Philippine Plants*, No. 2, Bureau of Government Laboratories, No. 17, p. 10.)

50698. *FICUS ODORATA* (Blanco) Merr. Moraceæ.

Fig.

A Philippine tree, 15 to 18 feet high, marked by its peculiarly strongly inequilateral, very rough, fragrant leaves which are sublanceolate with a one-sided rounded margin at the base. It is not very well known. (Adapted from *Blanco, Flora de Filipinas*, vol. 3, p. 89.)

50699. *FICUS ULMIFOLIA* Lam. Moraceæ.

Fig.

A Philippine plant with gray, woody branches covered at the tip with short rigid hairs. The ovate scaly leaves, unequally acuminate at base and tip, are sparsely bordered with shallow teeth which form remarkable sinuses at the summit. The globular, axillary fruits are mostly solitary and are the size of a small cherry or currant. (Adapted from *La Marek, Encyclopédie Méthodique Botanique*, vol. 2, p. 499.)

For previous introduction, see S. P. I. No. 35449.

50694 to 50709—Continued.

50700. *FICUS* sp. Moraceæ.

“(No. 1117.)”

50701. *PARKIA TIMORIANA* (DC.) Merr. Mimosaceæ.

Cupang.

(*P. roxburghii* G. Don.)

“(No. 1183.)”

A huge and remarkably handsome quick-growing tree, attaining a height of 120 feet or more, with a clear smooth trunk and beautiful, fine-feathery pinnate leaves. Native to Malaya, Burma, etc., it has been introduced into and become well established in Ceylon, thriving in the moist low country up to 2,000 feet. The clusters of long pods contain a quantity of white, powdery, farinaceous substance. Easily propagated by seed. (Adapted from Macmillan, *Handbook of Tropical Gardening and Planting*, p. 311.)

For previous introduction, see S. P. I. No. 47948.

50702. *PTEROSPERMUM* sp. Sterculiaceæ.

“(No. 1182, from Siam.)”

50703. *QUERCUS JAVANICA* (Blume) Drake. Fagaceæ.

Oak.

“(No. 1112.) *Passang batoc*.”

An exceedingly beautiful tree with oblong-lanceolate glabrous tawny leaves; the aments and young leaves are reddish tomentose. (Adapted from Blume, *Bijdragen tot de Flora van Nederlandsch Indië*, vol. 1, p. 525.)

50704. *QUERCUS THELECARPA* Miquel. Fagaceæ.

Oak.

“(No. 1111.) *Passang soeroe*.”

A tree 25 meters tall with very smooth coriaceous leaves, shining above and glaucescent beneath. The cups of the sessile fruits are 12 millimeters high and 40 millimeters across. The thick hull is broadly ovate with a prominent graceful tip. The semiglobose acorn, 20 to 25 millimeters high, and 23 to 34 millimeters broad, is somewhat furrowed. Native to Java. (Adapted from Valetton, *Boomsoorten van Java*, vol. 10, p. 28.)

50705. *QUERCUS* sp. Fagaceæ.

Oak.

“(No. 1110.) *Passang bodas*.”50706. *QUERCUS* sp. Fagaceæ.

Oak.

“(No. 1109.) *Passang djamba*.”50707. *QUERCUS* sp. Fagaceæ.

Oak.

“(No. 1113.) *Passang keyan* or *keang*.”50708. *QUERCUS* sp. Fagaceæ.

Oak.

“(No. 1114.) *Passang tonogo*.”50709. *SCHIMA NORONHAE* Reinw. Theaceæ.

A tree 30 to 60 feet high, with elliptic-acute leaves 6 inches long, lead colored above. The white fragrant flowers are in a loose terminal corymb. Native to the eastern Indian Peninsula from Tenasserim to Penang. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 289.)

50710. COLOCASIA sp. Araceæ.**Taro.**

From Quinto do Palheiro, Funchal, Madeira. Tubers presented by J. Ernest Blandy, American consul. Received June 18, 1920.

"*Igname branca*. A variety of taro apparently identical with the yellow tanyah grown in the coast regions of South Carolina and Georgia. The corms are intensely acrid in the raw state and require boiling for fully two hours to destroy this property and render them edible. They are of very pronounced flavor, but are preferred to most other taros by those who have acquired the taste for them. The buds are white, and the skin is without color beneath the brown fiber. It is of interest to note that the other taro, *igname vermeilho*, cultivated in Madeira, is apparently identical with the blue tanyah of the South Atlantic States." (R. A. Young.)

For previous introduction, see S. P. I. No. 19996.

50711 to 50725.

From Darjiling, Bengal, India. Seeds presented by G. H. Cave, curator, Lloyd Botanic Garden. Received June 30, 1920.

50711. ACACIA CATECHU L. Mimosaceæ.

A moderate-sized deciduous tree, common in most parts of India and Burma, with dark-brown much-cracked bark, bipinnate leaves, and spikes of white or pale-yellow flowers. The plant yields a pale-yellow gum, and a dull-red dye can be obtained from a solution of catechu, the commercially important astringent resinous extract obtained from the chopped wood by boiling for 20 hours.

Kath, largely used as an ingredient in the betel-leaf preparation which the natives are so fond of chewing, is a crystalline substance deposited upon twigs placed in the boiling solution of chopped wood. It is the kath in combination with lime in the betel-leaf preparation which gives the teeth and lips the red color so characteristic of Hindus. Continued use blackens the teeth.

The sapwood is yellowish white; the heartwood is either dark or light red and extremely hard. The wood is very durable, seasons well, and takes a fine polish. It is not attacked by white ants or by teredo. It is used for agricultural implements and wheelwright work. The fuel of the dead trees is much valued by goldsmiths and is one of the best woods for making charcoal. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 27.)

For previous introduction, see S. P. I. No. 45954.

50712. ALBIZZIA CHINENSIS (Osbeck) Merr. Mimosaceæ.
(A. stipulata Boiv.)

A shade tree of easy culture, which is a native of continental and insular southern Asia, extending to the Himalayas and China and ascending to altitudes of 4,000 feet. (Adapted from Mueller, *Select Extra-Tropical Plants*, p. 30.)

For previous introduction, see S. P. I. No. 42356.

50713. ALBIZZIA LEBBECK (L.) Benth. Mimosaceæ.**Lebbeck tree.**

A large deciduous spreading ornamental tree exceedingly good for avenues. Its roots do not penetrate very deep. It grows in the ever-green mixed forests in the sub-Himalayas from the Indus River east-

50711 to 50725—Continued.

ward, in Bengal, Burma, central and southern India, ascending to 5,000 feet in altitude. The bark is used in tanning; and the oil extracted from the astringent seeds is considered useful in leprosy. The leaves are used for camel fodder, and the tree is often cultivated for this purpose. It may be propagated readily by cuttings, grows rapidly, and flourishes in almost any soil, especially on canal embankments and roadsides, affording both fodder and fuel where these are otherwise scarce. The sapwood is white, and the heartwood is dark brown, hard, shining, mottled, with deeper longitudinal streaks. It seasons, works, and polishes well, and is fairly durable. It is used for picture frames, sugar-cane crushers, furniture, buildings, canoes, and wheelwork. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 156.*)

For previous introduction, see S. P. I. No. 42809.

50714. ALNUS NEPALENSIS D. Don. Betulaceæ.

A deciduous tree with elliptic-lanceolate entire or subentire leaves and fruiting spikes in large erect panicles; the nutlets have a membranous wing. Native to the temperate Himalayas and the Khasi Hills. (Adapted from *Hooker, Flora of British India, vol. 5, p. 600.*)

For previous introduction, see S. P. I. No. 47635.

50715. BERBERIS NAPAULENSIS (DC.) Spreng. Berberidaceæ. Barberry.

A shrub, native to the temperate Himalayas and the Khasi Hills, 3 to 20 feet high, leafy near the top only. The bipinnate leaves are coriaceous and the erect racemes of fascicled yellow flowers are followed by bitter, violet-glaucous berries. (Adapted from *Hooker, Flora of British India, vol. 1, p. 109.*)

For previous introduction, see S. P. I. No. 47646.

50716. BOMBAX MALABARICUM DC. Bombacaceæ.

A very large deciduous tree with branches in whorls, spreading horizontally, and the stem with large thorny buttresses. It is native to the hotter forests of India and Burma, and is the largest and most characteristic tree of eastern Rajputana. The trunk and branches are covered with large corky prickles. The inner bark yields a good fiber, suitable for cordage; the seeds yield the so-called silk cotton, too short and too soft to be spun, but largely used for stuffing pillows, etc., and for gun cotton. The flower buds are eaten as a potherb. The leaves and twigs are lopped for fodder. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 156.*)

For previous introduction, see S. P. I. No. 48025.

50717. ERIOBOTRYA HOOKERIANA Decaisne. Malaceæ.

A small robust tree with elliptic-lanceolate coarsely serrate coriaceous leaves, thickly covered with rusty tomentum when young, glabrous when old. The panicles of white flowers are followed by yellow ellipsoid fruits, three-fourths of an inch long. Native to the eastern Himalayas, Sikkim, and Bhutan, at altitudes of 4,000 to 6,500 feet. (Adapted from *Hooker, Flora of British India, vol. 2, p. 371.*)

50718. LOBELIA ROSEA Wall. Campanulaceæ.

A tall suberect herb, 4 to 12 feet high, with short branches, horizontal with drooping tips, and narrowly lanceolate leaves, 6 inches long,

50711 to 50725—Continued.

velvety above. The rose or white flowers are crowded in short racemes. Native to the subtropical Himalayas from Kumaon to Bhutan, and the Khasi Hills at altitudes up to 4,000 feet. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 427.)

For previous introduction, see S. P. I. No. 49648.

50719. *MISCANTHUS NEPALENSIS* (Trin.) Hack. Poaceæ. Grass.

A perennial grass with erect stems 3 to 6 feet high and linear leaves 6 to 18 inches long. The 1-flowered spikelets are partially enveloped in a tuft of long, silky, shining, golden yellow hairs. Native to the temperate Himalayas at altitudes of 5,000 to 8,000 feet, and to the Khasi and Naga Hills. (Adapted from *Collett, Flora Simlensis*, p. 590.)

For previous introduction, see S. P. I. No. 47735.

50720. *MORUS INDICA* L. Moraceæ. Mulberry.

A moderate-sized deciduous tree or shrub, found in the temperate Himalayas from Kashmir to Sikkim, ascending to 7,000 feet. It is largely cultivated in many parts of India for purposes of silk culture. The fiber was in very early times used by the Chinese for paper making and the twigs left by the silkworms and now thrown away might yield good half stuff for the paper maker. The fruit has an agreeable aromatic and acid flavor. The leaves are also valuable for fodder. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 5, p. 281.)

50721. *PYGEUM ACUMINATUM* Colebr. Amygdalaceæ.

An evergreen tree with glabrous oblong-lanceolate leaves, 4 to 6 inches in length and equally long racemes of yellow-green flowers. The dark-purple drupe is 1 inch in diameter. Native to eastern Bengal and the Khasi Hills. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 318.)

50722. *QUERCUS INCANA* Roxb. Fagaceæ. Oak.

A large evergreen tree found on the temperate Himalayas from the Indus River to Nepal, between altitudes of 3,000 and 8,000 feet. In spring it becomes purplish owing to the brush of fresh new leaves, which are softly tomentose. The bark yields a small quantity of a reddish fawn coloring matter which can be used in dyeing silk and cotton. The galls are used in the Punjab for dyeing hair. The bark is extensively employed for tanning purposes. The acorns form the astringent medicine known in the Punjab bazaars as balút; they are greedily eaten by monkeys and bears. The leaves are extensively lopped for fodder. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 382.)

50723. *RUBUS ROSAEFOLIUS* J. E. Smith. Rosaceæ.

An erect, branching Himalayan shrub which is very attractive because of its evergreen foliage, delicate white flowers, and especially its bright-red fruits, charming to the eye but rather insipid to the taste. (Adapted from *Curtis's Botanical Magazine*, pl. 6970.)

For previous introduction, see S. P. I. No. 39658.

50724. *SAPINDUS MUKOROSI* Gaertn. Sapindaceæ. Soapberry.

A tree 60 to 80 feet high, known as the *hou-erh-tsao*, which occurs throughout the Yangtze Valley up to altitudes of 3,000 feet. The

50711 to 50725—Continued.

panicles of flowers are followed by shining brown, globose fruits about the size of large marbles. The fruits are used for washing white clothes being considered for this purpose superior to *Gleditsia* pods. (Adapted from Wilson, *A Naturalist in Western China*, vol. 2, p. 72.)

For previous introduction, see S. P. I. No. 26280.

50725. *SPATHOLOBUS PARVIFLORUS* (Roxb.) Kuntze. Fabaceæ.
(*S. roxburghii* Benth.)

A gigantic climber common in the forests of the lower Himalayas in northeastern India and in Ceylon. A red gum resembling kino exudes from this plant; the seeds yield an oil used for cooking and for anointing purposes. A fiber obtained from the bark is twisted into ropes and bowstrings. (Adapted from Wait, *Dictionary of the Economic Products of India*, vol. 6, pt. 3, p. 319.)

50726 to 50966.

From Zanzibar, Zanzibar. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received June 8, 1920. Quoted notes by Doctor Shantz.

50726. *AMARANTHUS* sp. Amaranthaceæ. Amaranth

"(No. 871. Nyanza, Urundi. March 19, 1920.) The leaves constitute the African spinach extensively eaten by natives and Europeans. Grown about every cabin."

50727. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple

"(No. 941. Zanzibar, Zanzibar. April 6, 1920.) A large type; not grown very extensively near Zanzibar."

50728. *ANNONA MURICATA* L. Annonaceæ. Soursop

"(No. 624. Kigoma, Tanganyika Territory. February 20, 1920.) Probably the same as No. 511 and 527 [S. P. I. Nos. 35695 and 49979]. It is grown in many places and yields a heavy crop."

50729 and 50730. *ANNONA RETICULATA* L. Annonaceæ. Custard-apple

50729. "(No. 620. Kigoma. February 20, 1920.) Probably the same as sent before. This fruit is planted almost everywhere in the European settlements. It is probably less abundant than the soursop."

For previous introduction, see S. P. I. No. 49289.

50730. "(No. 869. Nyanza, Urundi. March 19, 1920.) Locally they often turn dark blue and dry up without ripening, due to drought."

50731. *ANNONA SENEGALENSIS* Pers. Annonaceæ.

"(No. 667. M'Sala, Urundi. February 24, 1920.) Seed from an old fruit. I have had no opportunity to test this fruit. Leaves very large and broad."

For previous introduction, see S. P. I. No. 38525.

50732. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.

"(No. 639. Kigoma. February 21, 1920.) Peanuts. They are grown everywhere with corn, manihot, etc. A very important element of diet; much more widely grown than *Voandzeia*."

50726 to 50966—Continued.

50733. ARECA CATECHU L. Phœnicaceæ.

Betel-nut palm.

"(No. 924. Malongwe, Tanganyika Territory. March 29, 1920.) The nut is chewed by almost everyone with pepper leaf, tobacco, lime, and gambier."

For previous introduction, see S. P. I. No. 45478.

50734. BAUHINIA KAPPLERI Sagot. Cæsalpiniaceæ.

"(No. 918. Tabora, Tanganyika Territory. March 27, 1920.) A handsome pink-flowered tree, like a mopaine [*Copaiva mopane*] with long pods (6 inches) and small seeds buried in flour."

50735. BYRSOCARPUS sp. Connaraceæ.

"(No. 698. Nyanza, Urundi. February 29, 1920. Herb. No. 692.) A beautiful small shrub with highly ornamental ripe pod and seed."

50736 to 50738. CAJAN INDICUM Spreng. Fabaceæ.

Pigeon-pea.

50736. "(No. 660. M'Sala. February 24, 1920. Herb. No. 680.)

A tall pea same as No. 531 [S. P. I. No. 49986] and grown by all natives both in the Kongo and about Lake Tanganyika. Usually eaten as a green pea; grows on woody bush 6 to 8 feet high."

50737. "(No. 930. Dar es Salaam, Tanganyika Territory. April 1, 1920.) A gray or light chocolate pigeon-pea."

50738. "(No. 934. Zanzibar. April 6, 1920.) Pigeon-pea similar to No. 930 [S. P. I. No. 50737]."

50739. CANAVALI GLADIATUM (Jacq.) DC. Fabaceæ.

Sword bean.

"(No. 910. Kigoma. March 26, 1920.) A very large red bean, many in a pod. From gardens."

For previous introduction, see S. P. I. No. 44806.

50740. CANNA sp. Cannaceæ.

Canna.

"(No. 708. Nyanza, Urundi. March 2, 1920.) Abundant in the Kongo and occasional here. Seed used in rattles at the dances, which seems to be its chief use by the natives."

50741. CANNA sp. Cannaceæ.

Canna.

"(No. 868. Nyanza, Urundi. March 19, 1920.) Red canna; seeds used in rattles for dancing."

50742 and 50743. CAPSICUM ANNUUM L. Solanaceæ.

Red pepper.

50742. "(No. 626. Kigoma. February 20, 1920.) A long red pepper, the principal type grown here. It is one-eighth of an inch in diameter."

50743. "(No. 627. Kigoma. February 20, 1920.) A small red pepper, globular, and about one-fourth of an inch in diameter."

50744. CASSIA SIAMEA Lam. Cæsalpiniaceæ.

"(No. 643. Ujiji, Tanganyika Territory. February 22, 1920. Herb. No. 676.) One of the principal street trees."

For previous introduction, see S. P. I. No. 42362.

50745 and 50746. CEIBA PENTANDRA (L.) Gaertn. Bombacaceæ. Капок.
(*Eriodendron anfractuosum* DC.)

50726 to 50966—Continued.

50745. "(No. 673. Nyanza, Urundi. February 27, 1920.) Trees planted along the walks; also used as a street tree in towns. These trees are branched from the base and have very smooth green bark. The cotton is not used by the natives."

For previous introduction, see S. P. I. No. 49442.

50746. "(No. 765. Nyanza, Urundi. March 9, 1920.) Bombax or kapok, a very attractive street tree with green bark and leaves like Manihot. This tree was planted everywhere by the Germans and they are supposed to have perfected machinery to weave the silk cotton into cloth."

50747. *Cissus* sp. Vitaceæ.

"(No. 776. Nyanza, Urundi. March 9, 1920. Herb. No. 706.) An ampelopsis or grapelike vine; a few dark fruits."

50748. *Clematis* sp. Ranunculaceæ.

Clematis.

"(No. 848. N'gano N'gano, Urundi. March 17, 1920.) A low herb-like clematis."

50749. *CRACCA POLYSTACHYA* (E. Mey.) Kuntze. Fabaceæ.
(*Tephrosia polystachya* E. Mey.)

"(No. 697. Nyanza, Urundi. February 29, 1920. Herb. No. 693.) A legume with pink flowers and small hairy pods."

50750. *CRACCA* sp. Fabaceæ.

"(No. 731. M'Sala, Urundi. March 7, 1920. Herb. No. 704.) A small wild bean very abundant on sandy soil."

50751. *CROTALARIA STRIATA* Schrank. Fabaceæ.

"(No. 678. Nyanza, Urundi. February 28, 1920.) A plant with very small flowers arranged in spikes."

For previous introduction, see S. P. I. No. 34670.

50752. *CROTALARIA* sp. Fabaceæ.

"(No. 661. Nyanza, Urundi. February 26, 1920. Herb. No. 709.) A tall yellow-flowered attractive crotalaria which bears a heavy crop of seed and may be valuable as a green manure or as a fiber plant."

50753. *CROTALARIA* sp. Fabaceæ.

"(No. 671. M'Sala. February 24, 1920.) An unusually prolific and large-podded crotalaria, probably the same as No. 661 [S. P. I. No. 50752] or No. 672 [S. P. I. No. 50754]."

50754. *CROTALARIA* sp. Fabaceæ.

"(No. 672. M'Sala. February 24, 1920.) With smaller pod, but a very heavy yield. Similar to No. 671 [S. P. I. No. 50753]. I have not seen these plants used here by the natives, but they have ornamental value if no other."

50726 to 50966—Continued.

50755 to 50757. *CUCUMIS SATIVUS* L. Cucurbitaceæ. Cucumber.

50755. "(No. 641. Ujiji. February 22, 1920.) A large cucumber, 8 inches long and 4 inches in diameter, of very good flavor. It looks more like a squash. I have been unable to get a thoroughly ripe fruit. These seeds are somewhat immature."

50756. "(No. 925. Malongwe. March 29, 1920.) A brown-skinned cucumber."

50757. "(No. 926. Malongwe. March 29, 1920.) Coat yellow with dark-green streaks."

50758. *CUCURBITA PEPO* L. Cucurbitaceæ. Pumpkin.

"(No. 631. Kigoma, Tanganyika Territory. February 2, 1920.) A sweet, green pumpkin, prized locally."

50759. *CYMBOPOGON* sp. Poaceæ. Grass.

"(No. 846. N'gano N'gano, Urundi. March 17, 1920.) A small Andropogonlike or Stipalike grass about 15 inches high, one of the good cattle grasses. Should do well in the mountain country of Arizona, New Mexico, Oregon, Washington, and California."

50760. *DOLICHOS LABLAB* L. Fabaceæ. Bonavist bean.

"(No. 701. Nyanza, Urundi. February 29, 1920. Herb. No. 701.) A bean which forms a long vine and grows abundantly on waste land. It is somewhat ornamental."

50761. *DOLICHOLUS* sp. Fabaceæ.

"(No. 704. Nyanza, Urundi. February 29, 1920.) A coarse beanlike vine with peculiar small blue seeds."

50762. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. Oil palm.

"(No. 628. Kigoma, Tanganyika Territory. February 20, 1920.) The oil palm; planted extensively everywhere here. It is an important food plant."

50763. *ELEusine CORACANA* (L.) Gaertn. Poaceæ. Ragi millet.

"(No. 866. N'gano N'gano, Urundi. March 18, 1920.) A grain crop of the Urundi Mountains."

For previous introductions, see S. P. I. No. 48456.

50764 and 50765. *ERAGROSTIS TREMULA* Hochst. Poaceæ. Grass.

50764. "(No. 644. Ujiji. February 22, 1920.) A grass which grows well as a ruderal."

50765. "(No. 645. Ujiji. February 22, 1920. Herb. No. 677.) Similar to No. 644 [S. P. I. No. 50764], taller."

50766. *ERAGROSTIS* sp. Poaceæ. Grass.

"(No. 839. N'gano N'gano, Urundi. March 5, 1920. Herb. No. 714.) A semiruderal grass which may be a good forage plant."

50767. *ERAGROSTIS* sp. Poaceæ. Grass.

"(No. 851. N'gano N'gano, Urundi. March 17, 1920.) A grass similar to *Eragrostis major*. Abundant, but never very important in natural sod."

50726 to 50966—Continued.

50768. *ERYTHRINA* sp. Fabaceæ.

"(No. 777. Nyanza, Urundi. March 9, 1920. Herb. No. 705.) An ornamental tree with a red bean, probably the same as No. 347 [S. P. I. No. 49588]. Planted as a windbreak and as an ornamental."

50769. *FICUS* sp. Moraceæ.

Fig.

"(No. 861. N'gano N'gano, Urundi. March 18, 1920.) A small fig eaten by the natives. Plant about 1 foot high."

50770. *GLADIOLUS* sp. Iridaceæ.

Gladiolus.

"(No. 665. M'Sala. February 24, 1920.) A few seed."

50771. *GLADIOLUS* sp. Iridaceæ.

Gladiolus.

"(No. 863. N'gano N'gano, Urundi. March 18, 1920.) Blue gladiolus with two small reddish spots on the side petals. A very handsome flower."

50772. *GLADIOLUS* sp. Iridaceæ.

Gladiolus.

"(No. 864. N'gano N'gano, Urundi. March 18, 1920.) Red mottled or streaked over yellow."

50773. *GLORIOSA* sp. Melanthaceæ.

"(No. 666. Nyanza, Urundi. February 26, 1920.) Seed of a lilylike plant. No flowers seen."

50774. *GOMPHOCARPUS PHYSOCARPUS* E. Mey. Asclepiadaceæ.

"(No. 729. M'Sala, Urundi. March 7, 1920. Herb. No. 703.) An attractive asclepiad which may have value as a fiber plant."

50775. *GOSSYPIUM* sp. Malvaceæ.

Kidney cotton.

"(No. 646. Ujiji. February 22, 1920.) The type grown by the natives. The seeds stick together and can be removed from the lint without becoming separated."

50776. *GOSSYPIUM* sp. Malvaceæ.

Kidney cotton.

"(No. 670. Nyanza, Urundi. February 26, 1920.) Cotton seed secured near a native hut. Lint and pod sent in. This is the principal type grown by the natives."

50777. *GOSSYPIUM* sp. Malvaceæ.

Cotton.

"(No. 700. Nyanza, Urundi. February 29, 1920.) Sent to Chef de Poste for planting. A pink boll weevil is abundant here in native cotton. I know nothing about this variety."

50778. *GOSSYPIUM* sp. Malvaceæ.

Kidney cotton.

"(No. 763. Nyanza, Urundi. March 9, 1920.) Seeds remain together; leaf, flower, and pod like *Egyptian*. A low plant, about 3 feet high, and yields a very heavy crop of cotton. One of the best plants I have seen. Boll-weevil damage noticeable."

50726 to 50966—Continued.

50779 to 50829. *HOLCUS* spp. Poaceæ.50779. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

“(No. 735. Nyanza, Urundi. March 7, 1920.) A collection of seeds from many different plants. It should all be planted and the different forms (if any) segregated. Collected from hundreds of plants.”

50780. *HOLCUS SORGHUM SUDANENSIS* (Piper) Hitchc. Poaceæ.

Sudan grass.

“(No. 657. M'Sala near Nyanza, 60 kilometers north of Kigoma. February 24, 1920. Herb. No. 679.) Sudan grass grows abundantly here. The plants are 6 to 10 feet tall.”

50781 to 50808. “(Nyanza, Urundi. March 7, 1920.) The following numbers are heads of *Holcus*. The measurements here given are: (1) Height of plant, in meters; (2) heads, in centimeters (two or more measurements mean that there were that number of heads); (3) number of nodes; and (4) number of branches. The branching indicated as 4+1 means branched at fourth node below the top one.”

50781. *HOLCUS SORGHUM SUDANENSIS* (Piper) Hitchc. Poaceæ.

Sudan grass.

“(No. 709.) Measurements: (1) 3.35, (2) 45, (3) 13, (4) 0.”

50782 and 50783. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ.

50782. “(No. 710.) Measurements: (1) 4.39, (2) 39, (3) 16, (4) 0.”

Kamerun grass.

50783. “(No. 711.) Measurements: (1) 4.42, (2) 46, (3) 15, (4) 0.”

50784. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

“(No. 712.) Measurements: (1) 3.44, (2) 37, (3) 14, (4) 0.”

50785. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ.

Kamerun grass.

“(No. 713.) Measurements: (1) 3.97, (2) 43, (3) 18, (4) 0.”

50786 to 50788. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

50786. “(No. 714.) Measurements: (1) 4.22, (2) 42, (3) 17, (4) 0.”

50787. “(No. 715.) Measurements: (1) 4.08, (2) 42, (3) 19, (4) 5+1.”

50788. “(No. 716.) Measurements: (1) 3.80, (2) 39, (3) 13, (4) 5+1; not matured.”

50789. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc.

Poaceæ.

Tabucki grass.

“(No. 717.) Measurements: (1) 3.67, (2) 38, (3) 22, (4) 31; roots are nine nodes at base.”

50726 to 50966—Continued.

50790. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)
“(No. 718.) Measurements: (1) 3.45, (2) 29, (3) 12, (4) 2+1; three heads from two branches.”
- 50791 to 50794. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Poaceæ. Tabucki grass.
50791. “(No. 719.) Measurements: (1) 4.22, (2) 41, (3) 16, (4) 4+1.”
50792. “(No. 720.) Measurements: (1) 2.53, (2) 44, (3) 10, (4) 3+1.”
50793. “(No. 721.) Measurements: (1) 3.67, (2) 42, (3) 24, (4) 4+1; heads on each branch.”
50794. “(No. 722.) Measurements: (1) 3, (2) 39, (3) 16, (4) 2+1; larger branch from sixth node.”
50795. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ. Kamerun grass.
“(No. 723.) Measurements: (1) 4.50, (2) 45, (3) 18, (4) 3; heads.”
50796. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ. Tabucki grass.
“(No. 724.) Measurements: (1) 3.25, (2) 45, (3) 12, (4) 4+1; larger branches from first four nodes above ground.”
50797. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)
“(No. 725.) Measurements: (1) 4.56, (2) 42, (3) 17; branches from nodes 1, 2, 4, 5, 6, 11, 12, 13, 14, 15.”
50798. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ. Tabucki grass.
“(No. 726.) Measurements: (1) 4.09, (2) 48, 40, 43, 30, 36, 30, 36; (3) 15; seven heads on branches measured from top to bottom.”
50799. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)
(No. 727a.) Received without notes, but apparently belonging with the preceding collection.
50800. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. Poaceæ. Tabucki grass.
“(No. 734.) Wild sorghum.”
- 50801 and 50802. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceæ. Kamerun grass.
50801. “(No. 762. Nyanza, Urundi. March 9, 1920.) A type in which the heads do not fully emerge from the upper sheath.”
50802. “(No. 769. Nyanza, Urundi. March 9, 1920.) Two unusually large heads of wild sorghum; grown in a field of kafir.”

50726 to 50966—Continued.

50803. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc.
Poaceæ. Tabucki grass.

"(No. 841. N'gano N'gano, Urundi. March 15, 1920.) A tall, upright, large-fruited type of wild sorghum; good type."

50804 to 50806. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

50804. "(No. 842. N'gano N'gano, Urundi. March 15, 1920.) Should be studied; a heavy-seeded form."

50805. "(No. 843. N'gano N'gano, Urundi. March 15, 1920.) Low plant; heavy seed crop."

50806. "(No. 844. N'gano N'gano, Urundi. March 15, 1920.) Similar to No. 843 [S. P. I. No. 50805]; very heavy seed crop."

50807 and 50808. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.)
Hitchc. Poaceæ. Tabucki grass.

50807. "(No. 870. Nyanza, Urundi. March 19, 1920.) Seed from hundreds of wild plants of various size and habit; an examination of the seed will give a fair idea of variation in flower structure."

50808. "(No. 900. Nyanza, Urundi. March 21, 1920.) A collection of heads; could not be sent in separately for lack of envelopes."

50809 to 50829. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

50809. "(No. 901. Nyanza, Urundi. March 21, 1920.) May be sterile kafir heads."

50810. "(No. 638. Kigoma. February 21, 1920.) White kafir from the market."

50811. "(No. 653. Ujiji. February 22, 1920.) A white kafir."

50812. "(No. 654. Ujiji. February 22, 1920.) Similar to No. 653 [S. P. I. No. 50811]; a pure white strain."

50813. "(No. 656. Ujiji. February 22, 1920.) A red or pinkish brown kafir. Well-shaped head and apparently much grown in this section, known as *Konge*, but not as well liked by the natives as *m'tama*, the white form."

50814. "(No. 658. Ujiji. February 22, 1920.) Red kafir, larger than No. 656 [S. P. I. No. 50813] but very similar."

50815. "(No. 659. Ujiji. February 22, 1920.) A variety probably identical with Nos. 656 and 658 [S. P. I. Nos. 50813 and 50814]."

50816. "(No. 668. Nyanza, Urundi. February 26, 1920.) Kafir, two heads collected near a native hut. It is grown everywhere here, but the seeds are usually eaten out by birds."

50817. "(No. 669. Nyanza, Urundi. February 26, 1920.) A rather heavy head of kafir; may be distinct from the others. I have seen no gooseneck forms."

50726 to 50966—Continued.

50818. "(No. 674. Nyanza, Urundi. February 27, 1920.) Deep red kafir known as *Conge* or *Konge*. This head is large, branches somewhat like broom corn, and has two seeds in each flower. This type may be especially interesting."
50819. "(No. 675. Nyanza, Urundi. February 27, 1920.) *Conge* with small head, central stem, but seed single in the flower."
50820. "(No. 676. Nyanza, Urundi. February 27, 1920.) Kafir; similar to No. 675 [S. P. I. No. 50819] may be the same."
50821. "(No. 732. Nyanza, Urundi. February 27, 1920.) A head of *Conge* or *Konge*, the red kafir, with double seed and good form."
50822. "(No. 733. Nyanza, Urundi. February 27, 1920.) A very small head of *m'tama*, the white kafir."
50823. "(No. 766. Nyanza, Urundi. March 9, 1920.) Several small heads of *m'tama*, white kafir, native grown."
50824. "(No. 767. Nyanza, Urundi. March 9, 1920.) A fine large head of *m'tama*, a white kafir. The seeds seem to be double; that is, two in each flower. This may be something new. I do not remember seeing anything just like it before."
50825. "(No. 768. Nyanza, Urundi. March 9, 1920.) Similar to No. 767 [S. P. I. No. 50824] but a more open, almost palmately branched, head. These numbers seem to be intermediate between the red and the white kafirs."
50826. "(No. 853. N'gano N'gano, Urundi. March 17, 1920.) *Conge*, red kafir, used largely to make pombe, or native beer."
50827. "(No. 865. N'gano N'gano, Urundi. March 18, 1920.) Red kafir (*Conge*) of type grown in the mountains."
50828. "(No. 916. Kigoma. March 27, 1920.) *M'tama*, white kafir, from native market."
50829. "(No. 935. Zanzibar. April, 1920.) White kafir."
50830. INDIGOFERA sp. Fabaceæ. Indigo.
"(No. 679. Nyanza, Urundi. February 28, 1910. Herb. No. 686.)"
50831. INDIGOFERA ENDECAPHYLLA Jacq. Fabaceæ. Indigo.
"(No. 909. Kigoma. March 26, 1920.)"
50832. IPOMOEA sp. Convolvulaceæ. Morning-glory.
"(No. 662. Nyanza, Urundi. February 26, 1920. Herb. No. 688.) A bush form, rather leafy; may be a good ornamental; flowers pale lavender and about 1 inch in diameter."
50833. IPOMOEA sp. Convolvulaceæ. Morning-glory.
"(No. 664. Nyanza, Urundi. February 26, 1920.) A fine flower; small vine with entire leaf."
50834. IPOMOEA PULCHELLA Roth. Convolvulaceæ. Morning-glory.
"(No. 764. Nyanza, Urundi. March 9, 1920.) A purple-flowered Ipomoea with a divided leaf; one of the most abundant types in central Africa."

50726 to 50966—Continued.

50835. *JATROPHA CURCAS* L. Euphorbiaceæ.

“(No. 830. Nyanza, Urundi. March 13, 1920. Herb. No. 708.) Black oil seed. Same as Nos. 459 and 611 [S. P. I. Nos. 50021 and 50239]. Planted as an ornamental.”

50836. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. Tomato.

“(No. 867. N'gano N'gano, Urundi. March 18, 1920.) Small red tomato, grown by natives.”

50837 and 50838. *MANIHOT ESCULENTA* Crantz. Euphorbiaceæ.

(*M. utilis* Pohl.)

Cassava.

50837. “(No. 677. Nyanza, Urundi. February 28, 1920.) The sweet cassava; the roots were eaten fresh and are sweet and very good. Seed is not usually produced but is quite abundant here. This is the chief money crop as well as the staple food on the lowlands in and about Nyanza and Kigoma. The roots are sold either (1) when fresh, peeled, fermented, dried, and pounded into flour; or (2) as a thick pasty cake (which has no flavor except that derived from wood smoke) made by cooking the flour in water; or (3) prepared by boiling fresh roots and pounding them in a mortar. The leaves are eaten as a green vegetable and the roots eaten in the following ways: Fresh, merely having been peeled; baked or boiled; boiled and pounded to a paste; peeled, placed in earthen vessels with water and allowed to ferment for three days, then sun dried. These dried roots, which are often perfectly white but at times are covered with a black or blue mold, are either boiled in fat or pounded in a mortar and sifted to a white flour, which is boiled to form a starchy paste. This doughy mass, wrapped in banana-leaf containers, constitutes one of the principal foods of the natives. Containers holding from 15 to 20 kilograms of cassava flour each are sold at a rate of about 1.50 francs for 100 kilograms. Corn is abundantly grown but is not as universal as Manihot. Drought may harm the corn crop, but even in severe drought a Manihot plantation can be dug up and the roots eaten. The elevated beds on which the plants are cultivated insure the penetration of water into the soil. The old Manihot stems are broken up and placed in the ground at the top of broad ridges 3 feet or so across and 1 to 2 feet high. Its growth is rapid and the weeds and grasses are kept out by occasional hoeing. When about 4 years old the plants are dug up and a new crop started. The fully matured crop forms an open thicket 6 to 10 feet high. At Nyanza a leaf spot seemed to be the only disease, and this, although abundant, caused very little damage. I have not found any of the bitter cassava; all plants which I have tasted are sweet.”

Plate III illustrates the native methods of preparing cassava roots for use.

50838. “(No. 904. Nyanza, Urundi. March 21, 1920.) Sweet cassava.”

50839. *MEIBOMIA* sp. Fabaceæ.

(*Desmodium* sp.)

“(No. 856. N'gano N'gano, Urundi. March 17, 1920.) A legume with sticky flower branches.”

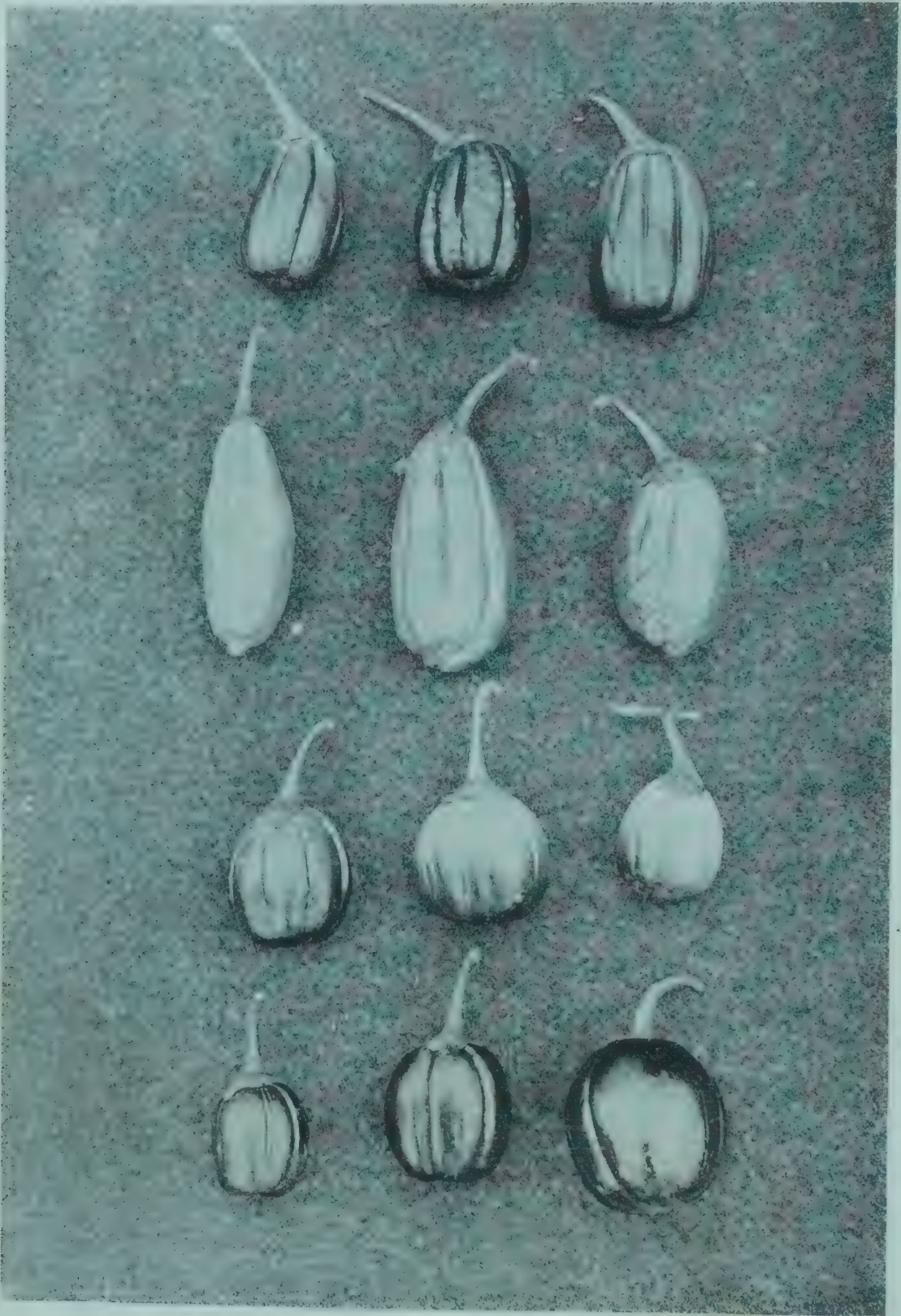
50726 to 50966—Continued.

- 50840 and 50841. *Nicotiana tabacum* L. Solanaceæ. Tobacco.
 50840. "(No. 829. Nyanza, Urundi. March 13, 1920.) Tobacco, type grown by natives."
 50841. "(No. 862. N'gano N'gano, Urundi. March 18, 1920.)"
 50842. *Ochna leptoclada* Oliver. Ochnaceæ.
 "(No. 736. Nyanza, Urundi. March 7, 1920. Herb. No. 691.) An attractive low form about 1 to 2 feet high."
 50843. *Pennisetum glaucum* (L.) R. Br. Poaceæ. Pearl millet.
 (*P. typhoideum* Rich.)
 "(No. 920. Njahna, Tanganyika Territory. March 28, 1920.) Grown more abundantly here than at any place I have seen in Africa."
 50844. *Pennisetum glaucum* (L.) R. Br. Poaceæ. Pearl millet.
 (*P. typhoideum* Rich.)
 "(No. 932. Zanzibar. April 6, 1920.) Pennisetum from India."
 50845 to 50901. *Phaseolus vulgaris* L. Fabaceæ. Common bean.
 "(Nyanza, Urundi. March 8, 1920.) Beans always are mixed in the field or market. They are marketed in large banana-leaf containers, which are either sack shaped or long and narrow. They are sold at 0.15 franc per kilo. It is one of the chief export crops."
 50845. "(No. 781.) A short, thick, dark greenish brown or almost black bean; shows an indistinct dark stripe."
 50846. "(No. 809.) Very dark tan, darker than No. 758 [S. P. I. No. 50886]; long, brown, flat bean."
 50847. "(No. 811.) Dark chocolate with metallic sheen; short, thick bean."
 50848. "(No. 694.) Light-brown, almost tan bean."
 50849. "(No. 759.) Dark-brown, greenish, or deep-tan bean showing a stripe; yellow shows through at times; may be similar to No. 755 [S. P. I. No. 50857]."
 50850. "(No. 788.) Tan-colored bean, more yellowish than No. 778 [S. P. I. No. 50852]."
 50851. "(No. 789.) Darker than No. 788 [S. P. I. No. 50850]."
 50852. "(No. 778.) Long, plump, dark-tan bean."
 50853. "(No. 810.) Dark reddish or purple-tan bean, rather small."
 50854. "(No. 757.) Rich deep tan-colored bean with mottled surface."
 50855. "(Nos. 801, 804, and 806.) Wine-colored bean with dark stripe."
 50856. "(No. 819.) Small, long, flat bean with light dots or stripes."
 50857. "(Nos. 755, 782, and 800.) Yellow with brown markings, occasionally a brown stripe over a brown stripe. This is the favorite bean of the Watusi chiefs."
 50858. "(Nos. 689, 759, and 799.) A gray mottled and striped bean similar to No. 690 [S. P. I. No. 50859]."
 50859. "(No. 690.) Streaked and mottled yellowish bean; one of the most abundant, and prized by the natives."



PREPARING CASSAVA ROOTS IN TANGANYIKA TERRITORY. (MANIHOT ESCULENTA CRANTZ, S. P. I. No. 50837.)

Cassava is the staple food crop of many tribes in Africa, as it is along the Amazon. Doctor Shantz found that the variety introduced under S. P. I. No. 50837 serves many uses. The leaves are used as a green vegetable, and the roots are eaten in several ways—fresh, merely having been peeled; baked; or boiled and pounded into a paste, fermented in water for three days, then sun dried and made into a flour. The various methods are illustrated in this photograph. Since this plant grows luxuriantly in the Gulf States, its use as a table vegetable deserves much more consideration than it has hitherto received. (Photographed by Dr. H. L. Shantz, Nyanza, Urundi, February 27, 1920.)



TYPES OF EGGPLANTS FROM THE BELGIAN KONGO. (*SOLANUM MELONGENA* L., S. P. I. Nos. 50915 TO 50918.)

These types of eggplants are very popular with the natives. Those in the top row (S. P. I. No. 50915) are red on the stem end and yellow on the blossom end; those in the second row (S. P. I. No. 50916) are yellow; those in the third row (S. P. I. No. 50917) have the colors of the first set reversed; while those in the bottom row (S. P. I. No. 50918) are entirely red. All of them are shown about one-third natural size. (Photographed by Dr. H. L. Shantz, Nyanza, Urundi, March 10, 1920; P37766FS.)

50726 to 50966—Continued.

50860. "(No. 752.) Very small flat bean, light-chocolate with black stripe."
50861. "(No. 816.) A light bean with a greenish gray stripe."
50862. "(No. 817.) Light kidney-shaped bean with bluish stripe."
50863. "(No. 802.) Deep yellowish brown bean with black stripe."
50864. "(No. 805.) Long bean, light chocolate with vine-colored stripe."
50865. "(No. 634.) Red beans, probably several varieties, mostly mottled or streaked."
50866. "(Nos. 745, 649, and 688.) Red mottled, stripes or mottling of a deep red."
50867. "(No. 761.) Purple mottling over light chocolate, appears purple."
50868. "(No. 780.) Deep-red or carmine-colored bean."
50869. "(No. 821.) A short, deep-red bean similar to No. 780 [S. P. I. No. 50868] in color, but smaller and more nearly spherical."
50870. "(No. 822.) A short, thick, deep-red wine-colored bean."
50871. "(No. 818.) Purplish tan, long, flat bean."
50872. "(No. 786.) Long, flat, red bean, lighter in color than No. 780 [S. P. I. No. 50868]."
50873. "(No. 814.) A small, deep-purple mottled bean."
50874. "(No. 751.) Long, flat bean, deep red over a lighter pink, mottled or striped."
50875. "(Nos. 691 and 695.) A reddish mottled bean."
50876. "(No. 760.) Long, flat bean, lavender-purple mottled."
50877. "(No. 784.) Long bean, black mottled over a gray base."
50878. "(Nos. 750 and 798.) A long, somewhat flattened, mottled reddish lavender bean; abundant."
50879. "(No. 797.) Long, flat bean, similar to No. 750 [S. P. I. No. 50878], but mottled bluish."
50880. "(No. 820.) Purple bean with light dot or stripe, or mottled."
50881. "(Nos. 693 and 795.) Purple-gray mottled bean."
50882. "(No. 783.) A dark or gray or brownish mottled bean (on white)."
50883. "(No. 812.) Yellowish tan mottled, long, large, and flat bean."
50884. "(Nos. 692 and 756.) Brown mottled bean."
50885. "(No. 791.) Thick, short, purple chocolate-colored bean."
50886. "(No. 758.) A very dark tan bean, uniform surface."
50887. "(No. 785.) Drab or gray bean, uniform color, darker than No. 787 [S. P. I. No. 50888]."
50888. "(No. 787.) Light-gray, short, thick bean."

50726 to 50966—Continued.

50889. "(No. 685.) A very common curry-yellow bean; probably the most abundant type."

50890. "(No. 754.) Probably imperfect seed of No. 685 [S. P. I. No. 50889.]"

50891. "(No. 815.) A rather round, straw-colored bean."

50892. "(Nos. 747 and 683.) Large white bean, especially prized by the natives. One of the best types grown here; not as abundant as the other types."

50893. "(No. 790.) Like a navy bean, but larger."

50894. "(Nos. 746, 652, and 684.) Small, round or short, and white, like a navy bean."

50895. "(No. 633.) A rather long white bean."

50896. "(No. 748.) Small, black bean, said to give the best yield; thick and short, about the size of a navy bean."

50897. "(No. 687.) A large black bean."

50898. "(No. 792.) Black bean similar to No. 748 [S. P. I. No. 50896], but flat, and longer."

50899. "(No. 793.) A very small black bean."

50900. "(No. 779.) Long, flat, black or blue bean."

50901. "(No. 813.) Long, narrow bean, with white dots, deep bluish black or black mottled."

50902. *PISUM SATIVUM* L. Fabaceæ.

Garden pea.

"(No. 855. N'gano N'gano, Urundi. March 17, 1920.) Field pea from the market. It grows well here in the cool mountain country."

50903. *PSIDIUM GUAJAVA* L. Myrtaceæ.

Guava.

"(No. 618. Kigoma. February 20, 1920.) Seed of a guava, grown in this section, which is 2 inches in diameter, has yellow rind and reddish flesh."

50904 to 50906. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

50904. "(No. 730. M'Sala. March 7, 1920.) Ricinus from native villages."

For previous introduction, see S. P. I. No. 49369.

50905. "(No. 859. N'gano N'gano, Urundi. March 17, 1920.) Ricinus wild in the hills."

50906. "(No. 922. Titici, Tanganyika Territory. March 29, 1920.) Seed of Ricinus."

50907. *RUBUS* sp. Rosaceæ.

Bramble.

"(No. 860. N'gano N'gano, Urundi. March 18, 1920.) A red raspberry of fairly good flavor; a vinelike plant."

50726 to 50966—Continued.

50908. *RUMEX MADERENSIS* Lowe. Polygonaceæ.

"(No. 838. N'gano N'gano, Urundi. March 5, 1920.) *Rumex* called *saba saba*; the leaves are used as a green vegetable."

50909. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

"(No. 637. Kigoma. February 21, 1920.) *Sesamum*; seed grown by the natives for oil production."

50910 to 50918. *SOLANUM MELONGENA* L. Solanaceæ.

Eggplant.

50910. "(No. 614. Kigoma. February 20, 1920.) An eggplant about 2 inches in diameter, light-yellow color, ridges not pronounced. Probably this and the two following are much the same except for color. They are sold in the market, and seem to be a vegetable much used by the natives."

50911. "(No. 615. Kigoma. February 20, 1920.) Similar to No. 614 [S. P. I. No. 50910] but bright red in color. Looks much like the red tomato; similar to No. 496 [S. P. I. No. 50088] and No. 493 [S. P. I. No. 50087]."

50912. "(No. 616. Kigoma. February 20, 1920.) Similar to No. 614 [S. P. I. No. 50910] but of orange color; somewhat intermediate between No. 614 [S. P. I. No. 50910] and No. 615 [S. P. I. No. 50911]. If I mistake not, they are native eggplants."

50913. "(No. 625. Kigoma. February 20, 1920.) A green eggplant, light green with dark-green streaks, yellowish and a little reddish at the blossom end, longer than Nos. 614 [S. P. I. No. 50910], 615 [S. P. I. No. 50911], and 616 [S. P. I. 50912]."

50914. "(No. 640. Ujiji. February 22, 1920.) A long, slender eggplant, dark purple, and slightly curved, about 1½ to 2 inches in diameter and about 6 inches long. This form shows the decayed spots so common on our eggplant. Very similar to the types on our market."

50915. "(No. 772. Nyanza, Urundi. March 9, 1920.) Eggplant, yellow above and red below; popular type with the natives."

50916. "(No. 773. Nyanza, Urundi. March 9, 1920.) A long yellow eggplant, 3 inches long."

50917. "(No. 774. Nyanza, Urundi. March 9, 1920.) Short, yellow and red eggplant."

50918. "(No. 775. Nyanza, Urundi. March 9, 1920.) A very red eggplant that is almost spherical."

Of the varieties here listed Nos. 50915 to 50918 are illustrated in Plate IV.

50919. *SOLANUM* sp. Solanaceæ.

"(No. 862. N'gano N'gano, Urundi. March 18, 1920.) Large rough-fruited *Solanum*; used for medicinal purposes."

50726 to 50966—Continued.

50920. *SPOROBOLUS* sp. Poaceæ.

Grass.

"(No. 728. M'Sala, Urundi. March 7, 1920.) A grass collected from sandy lake beach; probably same as No. 519 [S. P. I. No. 50037] and No. 845 [S. P. I. No. 50921]; if so, it is a valuable forage grass on the uplands and deserves a trial; it is perennial."

50921. *SPOROBOLUS PYRAMIDALIS* Beauv. Poaceæ.

Grass.

"(No. 845. N'gano N'gano, Urundi. March 17, 1920.) One of the abundant grasses of the mountains."

50922. *SYZYGIUM CUMINI* (L.) Skeels. Myrtaceæ.

Jambolan.

(Eugenia jambolana Lam.)

"(No. 949. Zanzibar, Zanzibar. April 6, 1920.) *Eugenia* called *jambolancee*; looks about like a ripe olive; fairly good eating, and very abundant in the market."

For previous introduction, see S. P. I. No. 43217.

50923. *TETRASTIGMA* sp. Vitaceæ.

"(No. 663. M'Sala, Urundi. February 24, 1920.) A wild grape about the size and appearance of a small Concord; bunch very irregular."

50924. *TRICHODESMA ZEYLANICUM* (Burm. f.) R. Br. Boraginaceæ.

"(No. 680. Nyanza, Urundi. February 28, 1920. Herb. No. 687.) Borage; rather attractive plant and flowers."

50925 and 50926. *TRICHOAENA ROSEA* Nees. Poaceæ. Natal grass.

50925. "(No. 703. Nyanza, Urundi. March 1, 1920.) A very abundant and important grass; may differ slightly from other samples of the same plant."

For previous introduction, see S. P. I. No. 49317.

50926. "(No. 850. N'gano N'gano, Urundi. March 17, 1920.) Abundant as a semiruderal."

50927. *TRICHOPTERYX* sp. Poaceæ.

Grass:

"(No. 849. N'gano N'gano, Urundi. March 17, 1920. Herb. No. 738.) A slender oatlike grass with a habit like an annual; eaten by cattle even when other feed is abundant."

50928. *TRICHOSANTHES* sp. Cucurbitaceæ.

"(No. 705. Nyanza, Urundi. March 2, 1920.) A small white flower with darker markings, shaped like a small gladiolus; it is a low, ornamental vine."

50929. *TRITICUM DURUM* Desf. Poaceæ.

Durum wheat.

"(No. 933. Zanzibar, Zanzibar. April 6, 1920.) Wheat from India."

50930 and 50931. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ

Catjang.

50930. "(No. 642. Uji. February 22, 1920.) A *Vigna* with lanceolate leaflets; very abundant in the fields and apparently planted, but seed not seen in the market."

50931. "(No. 903. Nyanza, Urundi. March 21, 1920.) Bush cowpea."

For previous introduction, see S. P. I. No. 44765.

50726 to 50966—Continued.

50932 to 50942. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea.

50932. "(No. 632. Kigoma. February 21, 1920.) Cowpea grown everywhere by the natives."

For previous introduction, see S. P. I. No. 48793.

50933. "(No. 696a. Nyanza, Urundi. February 29, 1920.) Cowpea as marketed by the natives; many different types included. It is one of the important crop plants. The pods, with beans almost ripe but still soft, are boiled and eaten out of the pod."

50934. "(No. 707. Nyanza, Urundi. March 2, 1920.) Native-grown cowpea."

50935. "(No. 832. Nyanza, Urundi. March 13, 1920.) Purple-colored cowpea; not very numerous."

50936. "(No. 833. Nyanza, Urundi. March 13, 1920.) Chocolate-colored cowpea with purple tinge. Similar to No. 832 [S. P. I. No. 50935]."

50937. "(No. 834. Nyanza, Urundi. March 13, 1920.) Light chocolate or straw-colored cowpea with a purple streak below the eye."

50938. "(No. 835. Nyanza, Urundi. March 13, 1920.) A light chocolate-colored cowpea, no purple streak."

50939. "(No. 836. Nyanza, Urundi. March 13, 1920.) Uniform or reddish or purplish cowpea."

50940. "(No. 837. Nyanza, Urundi. March 13, 1920.) Mixed lot after Nos. 832 to 836 [S. P. I. Nos 50935 to 50939] had been separated."

50941. "(No. 902. Nyanza, Urundi. March 21, 1920.) Cowpeas from native field."

50942. "(No. 931. Dar es Salaam. April 1, 1920.) Dark cowpea from the east coast."

50943. *VITIS* sp. Vitaceæ. Grape.

"(No. 727. M'Sala, Urundi. March 7, 1920.) Wild grape seed. Flavor somewhat like a black currant and about the same size; the vine is low, almost shrublike."

50944 to 50946. *VOANDZEIA SUBTERRANEA* (L.) Thouars. Fabaceæ.

50944. "(No. 696. Nyanza, Urundi. February 29, 1920.) A ground-nut grown by the natives. The ripe seeds are eaten occasionally when parched but they are very hard; they are yellowish in color. They are usually boiled while still green and eaten as one would potatoes."

50945. "(No. 831. Nyanza, Urundi. March 13, 1920.) Voandzeia with deep wine-colored beans. These are distinct from No. 696 [S. P. I. No. 50944], which are yellowish."

50946. "(No. 938. Zanzibar. April 6, 1920.) Voandzeia."

50726 to 50966—Continued.

50947 to 50956. *ZEA MAYS* L. Poaceæ.

Corn.

50947. "(No. 629. Kigoma. February 21, 1920.) Corn grown locally by the natives; somewhat mixed type."

50948. "(No. 630. Kigoma. February 21, 1920.) Like No. 629 [S. P. I. No. 50947]. The ear is not so long as the flint ear; not mixed. Corn is here one of the chief crops. It is always grown in elevated beds, 1 to 1½ feet high. This type of cultivation is best for the long droughts which occur here."

50949. "(No. 378. Nyanza, Urundi. March 8, 1920.) Corn from native fields. It is planted in hills, is a tall corn, so tall that it is often difficult to reach the ears. The ears when almost ripe are roasted and eaten. When ripe, the stem is cut off below the ear or ears and stacked on an open bamboo fence, the ears all pointing down on one side. Occasionally it is hung in trees or in the top of the hut. It is next in importance to *Manihot* as a food crop and is also sold as a money crop."

50950. "(No. 739. Nyanza, Urundi. March 9, 1920.) A yellow flint with occasionally purple and dented light-colored kernels."

50951. "(No. 740. Nyanza, Urundi. March 9, 1920.) A white flint with purple cob and an occasional purple kernel."

50952. "(No. 741. Nyanza, Urundi. March 9, 1920.) Flint with a carmine flush, a purple cob, and an occasional purple kernel."

50953. "(No. 742. Nyanza, Urundi. March 9, 1920.) White flint with an occasional purple kernel."

50954. "(No. 743. Nyanza, Urundi. March 9, 1920.) Purple and white flint."

50955. "(No. 744. Nyanza, Urundi. March 9, 1920.) White flint, All the above corn is tall with a large stalk; grown by the natives."

50956. "(No. 852. N'gano N'gano, Urundi. March 17, 1920.) Corn: Yellow, white, red, and blue; grown by Chief Rusoka."

50957. (Undetermined.)

"(No. 737. Nyanza, Urundi. March 8, 1920.) A red-fruited *Vitis*-like or *Ampelopsis*-like vine."

50958. (Undetermined.)

"(No. 858. N'gano N'gano. March 17, 1920.) A small legume with a habit similar to our *Psoralea tenuiflora*."

50959. (Undetermined.)

"(No. 905. Nyanza, Urundi. March 21, 1920.) A dark fruit like a chokecherry; probably not edible."

50960. (Undetermined.)

"(No. 928. Dar es Salaam. April 1, 1920.) *Mopia*. Like a *Strychnos*."

50961. *Pennisetum glaucum* (L.) R. Br. Poaceæ.
(*P. typhoideum* Rich.)

Pearl millet.

"(No. 936. Zanzibar, Zanzibar. April 6, 1920.) *Pennisetum* from east coast of Africa."

50726 to 50966—Continued.

50962 to 50964. *PHASEOLUS AUREUS* Roxb. Fabaceæ. Mung bean.

50962. "(No. 702. Nyanza, Urundi. March 2, 1920.) Small green bean."

50963. "(No. 919. Tabora. March 2, 1920.) Small green bush bean. Plants covered with flies."

50964. "(No. 937. Zanzibar, Zanzibar. April 6, 1920.) Small green bean."

50965 and 50966. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

50965. "(No. 803. Nyanza, Urundi. March 8, 1920.) Long, narrow, mottled purplish bean with greenish stripe."

50966. "(No. 807. Nyanza, Urundi. March 8, 1920.) Similar to No. 757 [S. P. I. No. 50854], but a deeper reddish tan."

50967. CITRUS sp. Rutaceæ.

From Swatow, Kwantung, China. Seeds presented by A. H. Page. Received June 1, 1920.

"Fruits we call the Chinese lime. The one that is nearly ripe weighs now about $4\frac{1}{2}$ ounces, the green one 2 ounces. Either would make a fairly good lemon pie, the riper one having the better flavor. The tree is very hardy and bears immense crops. I picked nearly 600 last fall from a tree about 9 feet high and of moderate spread. I certainly believe it is worth a trial for lime juice and citric acid." (Page.)

50968. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Miami, Fla. Originated at the Miami Plant Introduction Garden. Numbered July 31, 1920.

Variety *Dade*. This variety, which originated as a seedling from the Trapp avocado, ripens its fruit in November. The fruit is globose, green skinned, and of excellent quality. The tree grows vigorously and yields prolifically and regularly.

50969. PORTULACARIA AFRA Jacq. Portulacaceæ. Spekboom.

From San Diego, Calif. Cuttings presented by Miss Kate Sessions. Received at the Plant Introduction Garden, Chico, Calif., July 12, 1920. Numbered July, 1920.

A South African shrub or small tree with succulent shoots which are said to be keenly relished by live stock. The plant is reported to grow on dry waste places without requiring attention.

For a fuller description of this plant, see S. P. I. No. 48510, and also Nos. 9604 and 12020.

50970 and 50971.

From Monrovia, Liberia. Seeds presented by O. W. Barrett. Received July 1, 1920. Quoted notes by Mr. Barrett.

50970. CARICA PAPAYA L. Papayaceæ. Papaya.

"A very fine red-fleshed papaya."

50971. SOLANUM MELONGENA L. Solanaceæ. Eggplant.

"A shrubby, thorny, native eggplant, one of four rather important and interesting quasi-native Solanums used by the inhabitants here."

50972 to 50997. *OLEA EUROPAEA* L. Oleaceæ.

Olive.

From Adelaide, South Australia. Cuttings presented by J. F. Bailey, director, Botanic Garden. Received July 14, 1920. The descriptions following, except as otherwise stated, are adapted from Lelong, California Olive Industry, pp. 53-55, and from Ruby, Recherches Sur l'Olivier en France, pp. 97-279.

50972. *Atroviolacea Brun Bibier*.

50973. *Black Italian*.

50974. *Bouquetier*. A stout-branched tree with large thick leaves; fruits often clustered, large or small, bulging on one side; skin black and shining when ripe; flesh scanty, violet, very rich in oil. (*Ruby*.)

50975. *Bouteillon*.

50976. *Corregiolo*. A vigorous grower and prolific bearer, doing best on rich soils. The fruit, which ripens in November, yields a high-grade oil. (*Lelong*.)

50977. *Cushine*.

50978. *Frantoja*. "A synonym of *Corregiolo*." (*A. T. Marvin*.)

50979. *Grossee Redowno*. "Produces large fruit, yielding very high returns of oil of the best quality." (*Agricultural Gazette of New South Wales, July 2, 1919*.)

50980. *Hardy's Mammoth*. "A local seedling with a large berry, yielding 27.4 per cent of oil." (*Journal of the Department of Agriculture of South Australia, vol. 5, p. 928*.)

50981. *Institute*.

50984. *Longue d'Ascoli*.

50982. *Large Fruiting*.

50985. *Lucca*.

50983. *Late Blanquette*.

50986. *Morchioso*. Concerning the quality and yield of oil, the Journal of the Department of Agriculture of South Australia, vol. 20, p. 549, gives the following: Moisture, 42.36 per cent; oil (fresh olives), 27.29 per cent; yield per ton of fruit, 66.73 gallons.

50987. *Morocco*.

50988. *Palermo*. Concerning the quality and yield of oil, the Journal of the Department of Agriculture of South Australia, vol. 20, p. 549, gives the following: Moisture, 36.69 per cent; oil (fresh olives), 25.58 per cent; yield per ton of fruit, 61.83 gallons.

50989. *Picholin*. The tree is large and a strong grower. The oblong fruits, which ripen early, are pickled green. (*Lelong*.)

50990. *Pueblano*.

50991. *Royal de Languedoc*.

50992. *Rubra Caillon de Aix*.

50993. *Saint Catherine*. A medium-sized tree producing extra large fruits good for pickling green. (*Lelong*.)

50994. *Salome*.

50995. *Sir George Gray's Spanish*.

50996. *Verdale*. An early-ripening tree of dwarf habit; a shy bearer, sensitive to cold. Fruits suitable for pickling. (*Lelong*.)

50997. *White*.

50998 and 50999.

From Kulare, via Cairns, northern Queensland, Australia. Seeds presented by J. A. Hamilton. Received July 20, 1920. Quoted notes by Mr. Hamilton.

50998. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. Ragi millet.

"A very productive cereal from India. Grows well where wheat is not a success."

For previous introduction, see S. P. I. No. 46295.

50999. PHASEOLUS LUNATUS L. Fabaceæ. Lima bean.

"Improved Dwarf Lima. A new variety of Lima bean, my Improved Dwarf being a natural cross between Burpee's Bush Lima and the Dwarf Lima. In this climate the heavy pods of Burpee's Bush Lima beans have the tendency to lie on the ground and so rot in our wet spells, but my Improved Dwarf holds its stems upright and so keeps sound; it is also very prolific."

51000 to 51002.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received July 20, 1920. Quoted notes by Dr. Proschowsky.

51000. ALECTRYON SUBCINEREUM (A. Gray) Radlk. Sapindaceæ.
(*Nephelium leiocarpum* F. Muell.)

"A small tree with beautiful evergreen foliage; it is very hardy here, so that it might eventually serve as stock on which to graft fruit trees like *Nephelium longanum*, *N. mutabile*, and especially *Litchi chinensis*."

51001. FUCHSIA SPECIOSA Hort. Onagraceæ. Fuchsia.

"A few ripe fruits (edible, as are those of several species of *Fuchsia*) of *Fuchsia speciosa*. Still it is not as a fruit plant that I recommend it, but mainly as a strikingly beautiful flowering evergreen bush, with its gracefully drooping branchlets covered with hundreds of red flowers. It is quite hardy here."

51002. PASSIFLORA sp. Passifloraceæ.

"A very beautiful evergreen climber, with rose-colored flowers and edible fruits. It is quite hardy here."

Received as *Tacsonia jamesoni*, which does not seem to have been transferred to *Passiflora*.

51003 and 51004.

From Guayaquil, Ecuador. Seeds presented by James Birch Rorer, Asociación de Agricultores del Ecuador. Received July 20, 1920. Quoted notes by Mr. Rorer.

51003. ANNONA CHERIMOLA Mill. Annonaceæ. Cherimoya.

"(No. 44.) Seeds of a cherimoya; a large fruit containing only a small number of very large seeds."

51004. CYCLANTHERA PEDATA (L.) Schrad. Cucurbitaceæ.

"(No. 43.) A cucurbitaceous vegetable grown here, commonly called *achoccha* or *achogcha*."

An annual climber, native to western South America and Central America, where it is often cultivated for its edible fruits and shoots.

51003 and 51004—Continued.

It has 5-lobed leaves and inconspicuous flowers; the fruit, a pepo, is about 5 inches long, narrowly oval with a smooth skin or a few soft basal spines. (Adapted from *Contributions from the U. S. National Herbarium*, vol. 13, p. 120.)

For previous introduction, see S. P. I. No. 29330.

51005 and 51006.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received July 20, 1920.

51005. CARISSA CARANDAS L. Apocynaceæ.**Karanda.**

A small bush, not much higher than a man, with dense, dark-green, shining foliage and sharp stipular thorns an inch in length. The coriaceous, oval, or emarginate leaves are about an inch long and broad. The flowers are small, white, and jasminelike. They come out in the hot weather, but the charm of the bush is in July when its half-ripe waxy berries hang in clusters all over the bush. They are the size of olives, a brilliant red on one side and cream on the other. When ripe they are a uniform dark-red with a bland milky juice; the fruit is sour, and is much used by the natives for making chutney [a sort of spicy pickle]. The little unripe berries, with the skin and seeds removed, cooked in pastry with sugar and cloves, make a fair substitute for apple tarts. (Adapted from *Gardener's Chronicle*, vol. 24, p. 262.)

For previous introduction, see S. P. I. No. 46636.

51006. MICROCOS LATERIFLORA L. Tiliaceæ.**(*Grewia asiatica* L.)**

A small hazellike tree, native to the East Indies and cultivated throughout India. The small dark-purple berry is a pleasantly acid fruit and is much esteemed by the natives. A sherbet and wine are prepared from it in many parts of the country. From the bark a fiber is extracted which resembles European bast fiber and is much used in rope making. The mucilaginous juice of the bark is used in Seharunpur for clarifying sugar. The yellowish white, close-grained wood is strong and elastic and much prized for making banghy poles and for other purposes for which combined lightness and strength are desired. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 4, p. 177.)

For previous introduction, see S. P. I. No. 43659.

51007. CYATHEA sp. Cyatheaceæ.**Tree fern.**

From Lamac, Bataan, Philippine Islands. Spores presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received July 21, 1920.

"A tree fern with spiny midribs, collected in Baguio at an altitude of about 5,000 feet. The plant is exceedingly attractive and would unquestionably make a good conservatory plant." (*Wester*.)

51008 and 51009.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received July 26, 1920.

51008 and 51009—Continued.**51008. CESTRUM sp. Solanaceæ.**

"A very handsome *Cestrum* with yellow flowers, from Baguio, at an altitude of about 5,000 feet, which should be a valuable acquisition to the ornamental flora of Florida." (*Wester.*)

51009. PANDANUS TECTORIUS Parkins. Pandanaceæ.

A shrubby plant, up to 20 feet high, rarely erect; the stem is supported by aerial roots. The glaucous green leaves are coriaceous, sword shaped, and 3 to 5 feet long, with the marginal spines pointing forward, those on the midrib, forward or backward. The spadix of numerous cylindrical spikes of male flowers is 2 to 4 inches long and 1 to 1½ inches wide, and is inclosed in a long, white, fragrant spathe. A perfume which is much esteemed in Java is obtained from the male flowers. The solitary spadix of female flowers is followed by a yellow or red fruit which is an oblong or globose syncarpium, 6 to 10 inches long and broad. The plant is native of Konkan, Bombay, in sandy places near the seacoast. It is often planted and is known as the screw pine. (Adapted from *Cooke, The Flora of Bombay, vol. 2, p. 814.*)

For previous introduction, see S. P. I. No. 44779.

51010. GOSSYPIUM sp. Malvaceæ.**Cotton.**

From Algiers, Algeria. Seed presented by Dr. L. Trabut, director, Service Botanique. Received July 28, 1920.

"An herbaceous cotton from the Oasis of El Golea." (*Trabut.*)

51011. MICROCITRUS AUSTRALASICA (F. Muell.) Swingle. Rutaceæ.*(Citrus australasica F. Muell.)***Finger lime.**

From Wellington Point, Queensland, Australia. Seed presented by James Pink. Received July 29, 1920.

One of the most curious and interesting of the citrus fruits, native to the mountainous scrubs of the coastal region of northern New South Wales and Queensland. The young plants have more or less horizontally arranged branchlets, with very short internodes, small oval leaves, and stiff erect spines. The long, slender, cylindric-fusiform fruits, 6.5 to 10 centimeters long and 1.5 to 2.5 centimeters broad, are often slightly curved and frequently show a short blunt protuberance at both base and tip. The juice is sour and rather strongly pungent. The young plants of the finger lime showing the juvenile foliage arranged in tiers somewhat like a young *araucaria* plant, are very ornamental and should become better known for decorative purposes. It is a promising hedge plant, because it is very spiny and can be grown from cuttings. It is decidedly more hardy than the lime or lemon and may prove useful in breeding new types of hardy citrus fruits. (Adapted from *Journal of the Washington Academy of Sciences, vol. 5, p. 572.*)

For previous introduction, see S. P. I. No. 31877.

51012. ARTOCARPUS INTEGRA (Thunb.) L. Moraceæ. Jack fruit.*(A. integrifolia L.)*

From Mayaguez, Porto Rico. Seeds presented by T. B. McClelland, horticulturist, Porto Rico Agricultural Experiment Station. Received July 2, 1920.

A very large tree native to southern India and the Malay Peninsula and Archipelago. It is valued chiefly for its enormous fruits, a single one of which

may weigh over 100 pounds. These fruits, which are borne on the trunk and older branches, are usually irregularly oblong and are always green, with the rind consisting of somewhat hexagonal knobs. When ripe the fruits have a powerful odor, and the stronger the latter the better the quality of the fruit. With the exception of the rind and core, the entire fruit is eaten, the white or cream-colored, soft, flaky pulp being used either raw, or boiled and fried. The large seeds are roasted and used in curries.

The timber of this tree is excellent for cabinetwork; it is lemon yellow at first, turning darker with age. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 127.)

For previous introduction, see S. P. I. No. 40825.

51013 to 51015.

From Guayaquil, Ecuador. Seeds presented by James Birch Rorer, Asociación de Agricultores del Ecuador. Received July 3, 1920. Quoted notes by Mr. Rorer.

51013. *ANNONA CHERIMOLA* Mill. Annonaceæ.

Cherimoya.

"(No. 32.) *Cherimoya de la Sierra* is listed by Martinez in his Flora of the Province of Tunguragua as *Annona cherimola*, and he also states that this fruit is believed to be a native of the Province of Loja. It grows well at 5,000 to 7,000 feet altitude and ought to do well in Florida. The fruit is quite smooth on the outside, but is white within and has a flavor similar to the tropical sugar-apples."

For previous introduction, see S. P. I. No. 47318.

51014. *ANNONA RETICULATA* L. Annonaceæ.

Custard-apple.

"(No. 33.) Cherimoya; a large and very rough-skinned form."

For previous introduction, see S. P. I. No. 49289.

51015. *ANNONA SQUAMOSA* L. Annonaceæ.

Sugar-apple.

"(No. 34.) Cherimoya; this form has a somewhat smooth skin."

For previous introduction, see S. P. I. No. 49290.

51016 to 51021. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. Oil palm.

From Buitenzorg, Java. Seeds presented by the director, Plant-Breeding Station. Received July 3, 1920.

The following varieties are selected forms of different origin.

For general description, see S. P. I. No. 47124.

51016. (No. 6.) Variety *Nsombe B.* From Belgian Kongo.

For previous introduction, see S. P. I. No. 47307.

51017. (No. 8.) Variety *Nsombe C.* From Belgian Kongo.

For previous introduction, see S. P. I. No. 47305.

51018. (No. 11.) Variety *Singapore A.* From Singapore.

51019. (No. 13.) Variety *Banga.* From Kamerun.

For previous introduction, see S. P. I. No. 47504.

51020. (No. 23.) Variety *Lissombe.* From Kamerun.

51021. (No. 30.) Variety *Bundi C.* From Belgian Kongo.

For previous introduction, see S. P. I. No. 47306.

51022 and 51023.

From Buitenzorg, Java. Seeds presented by the director, Plant-Breeding Station. Received July 3, 1920.

The following seeds were received without description, accompanied only by the native names. Descriptions will not be available until the seeds have been grown.

51022. *CUCURBITA PEPO* L. Cucurbitaceæ. **Gourd.**
Laboe Batik Lohdor.

51023. *LAGENARIA VULGARIS* Seringe. Cucurbitaceæ. **Gourd.**
Laboe aer.

51024 and 51025.

From Bogota, Colombia. Seeds purchased from M. T. Dawe. Received July 7, 1920. Quoted notes by Mr. Dawe.

51024. *ATTALEA* sp. Phœnicaceæ. **Palm.**

"Nuts of the *Mamarrón palm*, from the Magdalena Valley, on the alluvial lands. An important source of vegetable oil in this country."

51025. (Undetermined.)

"Nuts of the *Palma de San Juan*, from the upper parts of the foothills of the Magdalena Valley region. May produce oil of value."

51026. DENDROCALAMUS GIGANTEUS Munro. Poaceæ. **Bamboo.**

From Peradeniya, Ceylon. Seeds presented by H. F. Macmillan, superintendent, Royal Botanic Gardens. Received July 7, 1920.

The tallest of the bamboos, a native of the Malay Peninsula but much cultivated in Burma, where it is known as *wabo* and in Assam as *worra*. It is used in Burma for posts and rafters in house building, for carts, and for joints for pails, boxes, flowerpots, etc. The large culms are often 120 feet long and 25 to 30 inches in circumference. Extra fine culms are cut into short lengths and prepared as umbrella stands.

The rapid growth of this strikingly handsome bamboo was tested in the botanic garden at Buitenzorg, Java, where the plant grew, on the average, 7.7 millimeters per hour by day and 13 millimeters per hour by night. One culm grew 57 centimeters in 24 hours. (Adapted from *Watt, Commercial Products of India*, p. 101, and *Schimper, Plant Geography*, p. 216.)

For previous introduction, see S. P. I. No. 45963.

51027 to 51033.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received July 7, 1920. Quoted notes by Mr. Popenoe.

51027. *DOLICHOLUS PHASEOLOIDES* (Swartz) Kuntze. Fabaceæ.
(*Rynchosia phaseoloides* DC.)

"(No. 397a. June 18, 1920.) Seeds of a slender climber from the mountains near San Pablo Tarrazu, elevation about 5,500 feet. Its trifoliate leaves, which are borne upon slender wiry stems, suggest those of the common bean (*Phaseolus vulgaris*), and its seeds are strikingly similar to those of *Abrus precatorius*, the crab's-eye of the West Indies; they are small, and bright red with a black eye. Of interest chiefly for its seeds."

51027 to 51033—Continued.

51028. *Gossypium* sp. Malvaceæ.

Cotton.

"(No. 398a. June 18, 1920.) Cotton seed from a plant growing in the park at Alajuela, Costa Rica. The variety is one with brown fiber, of unknown origin."

51029 to 51031. *PERSEA AMERICANA* Mill. Lauraceæ.

Avocado.

(P. *gratissima* Gaertn. f.)

51029. "(No. 400. June 18, 1920.) Bud sticks of avocado No. 45, from the property of Padre Zuñiga, in Alajuela, Costa Rica. This tree was called to my attention by Don Anastasio Alfaro, who has been familiar with it for years. He states that it is one of the best avocados in Alajuela, if not the best of all. I have seen very little of the variety. The parent tree is old, and not in good condition. It stands in an inclosed property behind the principal church of Alajuela. The fruit is slender pyriform in outline, green when ripe, and probably 12 to 16 ounces in weight. The quality is said to be very good, but I suspect the seed may be too large, by our standards. The variety is evidently of the West Indian race, and ripens its crop in July and August."

51030. "(No. 383 and No. 402. May 27 and June 18, 1920.) Bud sticks of avocado No. 43, from the garden of Pantaleon Cordoba, San Jose. This variety has something of a local reputation as an avocado of excellent quality, and in addition ripens later than the average. In some of its characters it looks much like a Guatemalan; but more likely it is simply a highland form of the West Indian race (there is, of course, no hard and fast line which separates the two races, anyway). The parent tree, which stands about 50 feet to the rear of Sr. Cordoba's house, is 25 or 30 feet high, with a scanty crown and a straight trunk nearly 2 feet thick at the base. The fruit at this time (June, 1920) is not half grown, but I have seen a model of the mature fruit, made by Don Anastasio Alfaro, Director of the National Museum. The form is nearly spherical, with a tendency to longitudinal ribbing; the weight is perhaps 18 ounces and the color deep green. I believe the seed is proportionately smaller than in most of the Costa Rican avocados, and the quality of the flesh is said to be excellent. The ripening season is September to November."

51031. "(No. 392a. June 18, 1920.) Seeds of *aguacate de ants*, the wild avocado, from the region of La Palma."

"The character of the tree and fruit is such as to suggest that this species, which is certainly indigenous in the mountains of central Costa Rica, is the wild prototype of the cultivated Guatemalan race, if not of the West Indian as well. The wild tree has been observed up to the present only at altitudes between 4,500 and 5,000 feet. It is not found in the forest, but frequents open places close to small streams and brooks, or is found associated with a few other trees along the margins of such watercourses.

"In general appearance the trees can scarcely be distinguished from Guatemalan avocados; the foliage is of a somewhat lighter shade of green than is common in the latter. The flowering season is March and April, and the fruits ripen a year from the following May or June—that is, in from 12 to 15 months. The



A WILD AVOCADO TREE IN COSTA RICA. (*PERSEA* SP., PROBABLY
P. AMERICANA MILL., S. P. I. NO. 51031.)

This wild avocado, which, up to the present, has been observed only on the slopes of the volcano Irazu, in central Costa Rica, is believed by its discoverers, Wilson Popenoe and Oton Jimenez, to be the wild prototype of the cultivated Guatemalan race of avocados, and probably of the West Indian as well. It is quite distinct from the Mexican avocado both in appearance of tree and foliage and in the character of the fruit. Because of its wild nature and the vigor of its growth it is believed this avocado may be of value as a stock plant on which to graft cultivated sorts. (Photographed by Wilson Popenoe, near La Palma, Costa Rica, June 9, 1920; P17902FS.)



THE AGUACATE DE ANÍS, OR WILD AVOCADO, OF COSTA RICA. (*PERSEA* SP., PROBABLY *P. AMERICANA* MILL., S. P. I. NO. 51031.)

In general character the wild avocado of Costa Rica closely resembles some of the cultivated sorts of the Guatemalan race. It has a thick, woody, coarsely granular shell, dark green on the surface. The flesh is yellow and unlike that of cultivated avocados in that it is strongly anise flavored and contains small gritty bodies like the stone cells in some of the Chinese pears. The seed is large and tight in the cavity. The average weight of specimens collected in Costa Rica was about 6 ounces. (Photographed by Wilson Popenoe, San Jose, Costa Rica, May 31, 1920; P17845FS.)

51027 to 51033—Continued.

fruits from some of the wild trees are harvested by the natives and carried into the villages, where they are sold.

"This species will be studied further to determine its relationship with the cultivated avocados. It is introduced with this object in view and in the hope that it may prove to be a vigorous stock plant on which to graft some of the cultivated avocados."

For further description, see S. P. I. No. 50585.

For illustrations of the tree and of a fruit of the wild avocado, see Plates V and VI.

51032. *PERSEA CAERULEA* (Ruiz and Par.) Mez. Lauraceæ.

"(No. 399a. June 18, 1920.) From the mountains near Frailes, Costa Rica. Altitude, about 5,500 feet. Seeds of a common tree in this region, found usually in half-open places of the mountainsides and not in the dense forest. It reaches about 30 feet in height, and has a leaf strongly resembling that of *Persea americana* but more narrow than in many varieties of the latter. The fruits, which are produced abundantly in racemes, are black, the size of large peas, with very little pulp surrounding the seed. Introduced for trial as a stock plant for the avocado."

51033. *RUBUS COSTARICANUS* Liebm. Rosaceæ.

Blackberry.

"(No. 401a. June 18, 1920.) Seeds of a wild blackberry, *mora*, from Frailes, Costa Rica. Altitude, about 5,500 feet. The plant is a vigorous, bushy grower, and the fruits, which are produced in reasonable profusion, are composed of few large drupelets, making them somewhat different in appearance from the common blackberries of the North. They are of good flavor, but not very large—rarely more than three-quarters of an inch long but nearly as broad as long. Of interest to those engaged in blackberry breeding."

51034 to 51036.

From Buitenzorg, Java. Seeds presented by the director, Plant-Breeding Station. Received July 7, 1920.

51034 and 51035. *CUCURBITA PEPO* L. Cucurbitaceæ.

Gourd.

The following varieties were received without description.

51034. *Laboe deppe*.

51035. *Laboe Batik hawaek*.

51036. *PLACUS BALSAMIFER* (L.) Bail. Asteraceæ.

(*Blumea balsamifera* DC.)

A rather bushy woolly plant with a tall branched stem and leathery leaves 4 to 8 inches long. The flowers, borne in numerous small heads, have red pappus. The whole plant smells strongly of camphor which may, indeed, be prepared from it, and a warm infusion of the leaves acts as a pleasant sudorific. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 458.)

51036. *PLACUS BALSAMIFIER* (L.) Bail. Asteraceæ.

From Kashmir, India. Seeds presented by Charles Hadow, British Embassy, Washington, D. C. Received July 7, 1920.

"The 'Tunla' or 'Galmey sunflower,' collected at an altitude of 8,000 feet in Kashmir, India, on grassy slopes exposed to snow in winter." (*Hadow.*)

A very attractive sunflowerlike composite from the western Himalayas. The very stout stem is usually not more than a foot high, occasionally 18 inches, with yellowish green, thick-veined, finally serrate leaves and very broad thick bracts. The flowers are usually solitary and a brilliant orange in color, with crenate ray flowers. (Adapted from *Flora and Sylva*, vol. 1, p. 310.)

51038 to 51040. *PSIDIUM GUAJAVA* L. Myrtaceæ. **Guava.**

From Porto Alegre, Rio Grande do Sul, Brazil. Seeds presented by G. S. Froes. Received July 7, 1920. Quoted notes by Mr. Froes.

Three varieties.

51038. "Yellow fruited; used as sweet preserves."

51039. "Rose-colored fruit; used for guava jelly."

51040. "White fruited; eaten fresh."

For previous introduction, see S. P. I. No. 48575.

51041. *NONNEA ROSEA* Link. Boraginaceæ.

(*Anchusa rosea* Bieb.)

From Stockholm, Sweden. Seeds presented by Dr. Robert E. Fries, director, Botanic Garden. Received July 10, 1920.

An attractive hardy annual from the northern Caucasus. It has procumbent stems, oblong leaves, and funnel-shaped, purple-white flowers. (Adapted from *Bieberstein, Flora Taurico-Caucasica*, vol. 1, p. 125.)

51042 to 51046. *SOJA MAX* (L.) Piper. Fabaceæ. **Soy bean.**

From Nanking, Kiangsu, China. Seeds presented by John K. Davis, American consul. Received July 12, 1920.

"Five varieties; obtained from a grain market in the city of Nanking." (*Davis.*)

51042. *Black.*

51045. *Late yellow.*

51043. *Tsing.*

51046. *Yellow eighth month.*

51044. *Fifth month yellow.*

51047 to 51049.

From Auckland, New Zealand. Seed presented by J. W. Poynton. Received July 15, 1920. Quoted notes by Mr. Poynton.

51047. *ENTELEA ARBORESCENS* R. Br. Tiliaceæ.

"A beautiful tree with extremely light wood, half as heavy as cork. Its large, maplelike leaves are evergreen. It is the only representative of its genus. Its distribution is confined to two small areas in the North Island of New Zealand and one in the South Island. Will grow only in warm climates, but should do well in California and your Southern States."

For previous introduction, see S. P. I. No. 48165.

51048. *METROSIDEROS TOMENTOSA* A. Rich. Myrtaceæ.

"This tree, called *pohutukawa* by the Maoris, loves the seashore and will grow where at high tides the sea water covers its roots. It will also grow inland, many fine specimens being found around Lake Taupo

51047 to 51049—Continued.

in the heart of the North Island. The timber is hard and durable and especially useful for boat building, as its limbs have many knees. About Christmas time (midsummer here) it is covered with a wealth of scarlet blossoms, and on this account the British colonists call it the Christmas tree. As it has thick evergreen foliage and is quite uninjured by salt-water spray, it makes splendid shelter in exposed seaside situations. It grows readily from slips; and a hedge, shelter belt, or plantation is quickly available. It will not grow in a cold climate, but should find a congenial second home in Florida, California, and the Gulf States, where it should be of considerable value. I gathered this seed from a well-shaped healthy specimen, which last summer was a picture with its abundant blossoms."

For previous introduction, see S. P. I. No. 48151.

51049. MERYTA SINCLAIRII (Hook. f.) Seem. Araliaceæ.

"*Puka*. This small diœcious tree grows from 15 to 20 feet high and has larger leaves than any other New Zealand plant. It is found native only in the North Island; once the rarest of trees, only one specimen being known. A missionary discovered it near a native village (pah). It was 'tapu,' and he was forbidden under pain of death to touch it. He sketched it and announced its discovery, which was skeptically received among botanists. He returned in 12 years and found the pah deserted. He obtained some of the leaves, and the plant was classified by the botanist, Sinclair, and named for him. Subsequently 27 plants were discovered on some small islands in the Hauraki Gulf (New Zealand). From them, all existing trees of this species originated. It is a very ornamental tree, much favored for parks and gardens. It will not stand much frost, but should grow well in your warmer areas. It makes a beautiful pot plant. Like nearly all our trees, it is evergreen. Trees vary much in the size and glossiness of their foliage. The tree from which I collected the inclosed seed is a very fine one."

For previous introduction, see S. P. I. No. 47570.

51050 and 51051.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received July 15, 1920. Quoted notes by Mr. Popenoe.

51050. ANNONA MURICATA L. Annonaceæ.**Soursop.**

"(No. 407. June 24, 1920.) Bud sticks of the *Bennett* soursop. A choice variety of the soursop from the garden of the superintendent of Zent Farm, United Fruit Co., near Port Limon. The tree is more productive than any other I have seen, and the fruit is unusually large and handsome. Budded trees of this variety should be tested in Porto Rico, Cuba, southern Florida, and elsewhere; I believe they will prove decidedly superior to the average seedling. The name *Bennett* has been given in honor of Mr. George S. Bennett, agricultural superintendent of the Costa Rican division, United Fruit Company."

For previous introduction, see S. P. I. No. 49258.

For an illustration of the fruit of the soursop, see Plate VII.

51050 and 51051—Continued.

51051. *GUILLIELMA UTILIS* Oerst. *Phœnicaceæ*.
(*Bactris utilis* Benth. and Hook.)

Palm.

"(No. 411a. June 24, 1920.) Seeds of the *pejibaye* palm, from fruits obtained in Tucurrique."

For description, see No. 391a [S. P. I. No. 50679].

51052 to 51055.

From Chama, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received July 9, 1920. Quoted notes by Mr. Johnson.

51052. *ARDISIA* sp. *Myrsinaceæ*.

"(No. 228.) Seeds of a red-berried shrub collected at Xalave, at an altitude of about 1,500 feet. The berries are produced quite freely in flat-topped clusters, 2 to 3½ inches in diameter, along the larger stems on short branchlets as well as terminally; the bright, shining red berries are one-fourth to half an inch in diameter and, with the foliage, make the shrub quite ornamental. I have not noticed the birds molesting the fruits, and the bunches always appear well filled. The berries evidently last in perfection a long time, as I have observed them for two months or more and they are still perfectly fresh and clean. The shrub may be of value as a red-berried pot plant for florists and for outside planting in Florida and California."

51053. *ARDISIA* sp. *Myrsinaceæ*.

"(No. 231.) Seeds of a color variety of No. 228 [S. P. I. No. 51052]. Fruits are rich wine purple. Quite pretty."

51054. *CAPSIUM ANNUUM* L. *Solanaceæ*.

Red pepper.

"(No. 226.) 'Rash-ik' (green Chile pepper), also 'Sal-ik' (white Chile pepper). A fine-flavored Chile pepper that is always in demand here and commands the best price. When immature it is creamy white, though some specimens are tinged with purple. When fully ripe it is a rich red and is very hot. For three days after cleaning this seed my hands burned. When not mature it is not very hot and may be eaten with impunity. The bush does not reach a very large size (3 feet) and bears when 1 foot in height."

51055. *PASSIFLORA LIGULARIS* Juss. *Passifloraceæ*. Sweet granadilla.

"(No. 227.) Seeds from wild vines. The pulp is very pleasant, but the juice in the aril is very acid and almost takes the skin off one's mouth. This material was brought to me by an Indian."

51056. *CHAYOTA EDULIS* Jacq. *Cucurbitaceæ*.
(*Sechium edule* Swartz.)

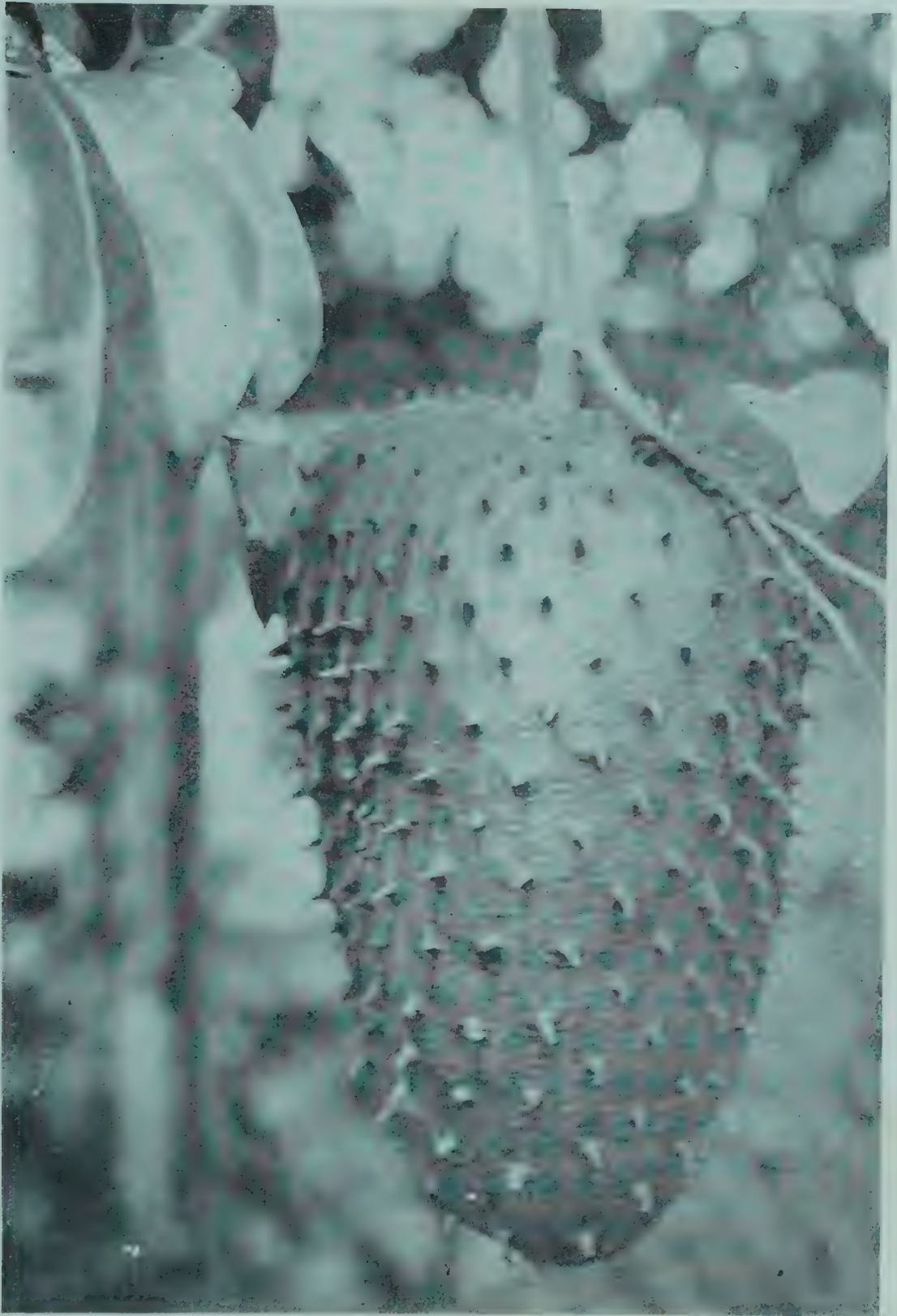
Chayote.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received July 31, 1920.

"Fruits of *guisquil de papa*. These are known here at Coban as *peruleros*. They are quite small and rather wide and plump, pure white in color, mealy and dry." (Johnson.)

51057. *BROMUS* sp. *Poaceæ*. Grass.

From Santiago, Chile. Seeds presented by Sr. Badilla, through C. A. McQueen, commercial attaché, embassy of the United States of America. Received July 26, 1920.



THE BENNETT SOURSOP, A CHOICE VARIETY FROM COSTA RICA. (*ANNONA MURICATA* L., S. P. I. No. 51050.)

Superior forms of the soursop, a valuable fruit of the American Tropics, have not yet been established horticulturally. Practically all of the trees now growing throughout the world are seedlings. Since they vary in productiveness and in the character of their fruit it is a simple matter to select the best ones and propagate them by budding or grafting. The variety here illustrated is one which was grown at the Zent Farm of the United Fruit Company near Port Limon, Costa Rica, and is considered unusually valuable because of the large size and excellent quality of its fruits as well as the productiveness of the tree. (Photographed by Wilson Popenoe, Zent, Costa Rica, June 21, 1920; P17957FS.)



A SEEDLESS FORM OF THE PEJIBAYE, OR PEACH PALM, OF COSTA RICA.
(GUILIELMA UTILIS OERST., S. P. I. No. 51092.)

Because of the food value and delicious character of its boiled fruits, the pebibaye has long ranked among the important economic plants of Costa Rica. While each fruit normally contains a large bony seed, there are a few trees in San Jose which produce seedless fruits. These trees are propagated by suckers, in the same manner as the date palm. It is not yet certain, however, that the suckers will produce seedless fruits when grown in other climates than that of San Jose. (Photographed by Wilson Popenoe in the garden of Don José Zeledón, San Jose, Costa Rica, June 17, 1920; P17947FS.)

"Seeds brought in by Stafford Hamm, an American mining engineer, a gift from Sr. Badilla, who owns an estate in the high mountains. This grass is said to be extremely resistant to cold and to grow almost without moisture. It is a good soil binder on lands which are subject to high winds and occasional heavy rains." (McQueen.)

51058 to 51060.

From Chama, Alta Vera Paz, Guatemala. Seed presented by Harry Johnson. Received July 12, 1920. Quoted notes by Mr. Johnson.

51058. *BEGONIA* sp. Begoniaceæ.

Begonia.

"(No. 190.) *Begonia scandens* of gardeners(?)."

51059. *PIPER TUBERCULATUM* Jacq. Piperaceæ.

Pepper.

"(No. 188.) *Cordoncilla*. The dried flower spikes are used in the same manner as *Piper nigrum*. It is used here in the preparation of cha-al-cacao, a very good drink made by coarsely grinding the cacao with cinnamon and pepper. The flavor is a little different from black or white pepper and may be appreciated as a new condiment."

51060. *HECKERIA* sp. Piperaceæ.

Pepper.

"(No. 189.) *Obel* (Kekèhi name). The young leaves have a rather pleasant taste and are used to flavor fish, soups, stews, meats, etc. The plant is pretty when small, but soon grows 'leggy.' The large roundish leaves are green."

51061. *CASSIA ELEGANS* Voigt. Cæsalpiniaceæ.

From Cuzco, Peru. Seeds presented by A. A. Giesecke. Received July 15, 1920.

A shrubby ornamental Cassia with feathery pinnate leaves composed of obtuse lanceolate leaflets having yellowish midribs. Its original habitat is unknown, since the plant is known only in cultivation. (Adapted from Voigt, in *Sylloge Plantarum Ratisbonensi*, vol. 2, p. 55.)

51062 to 51068.

From East Melbourne, Victoria. Seeds presented by M. Medson. Received July 17, 1920.

51062. *BACKHOUSIA CITRIODORA* F. Muell. Myrtaceæ.

An Australian tree 18 to 20 feet high, with lemon-scented foliage like that of the scented verbena (*Lippia citriodora*). The essential oil from the leaves has been found suitable for scenting soaps, and the dried leaves give a very pleasant odor to linen closets, etc. The pinkish wood is hard and fine grained. (Adapted from Maiden, *Useful Native Plants of Australia*, pp. 290, 381.)

For previous introduction, see S. P. I. No. 33643.

51063. *DORYANTHES PALMERI* W. Hill. Amaryllidaceæ.

A beautiful member of the amaryllis family, native to Australia, where it grows to a height of 8 or 10 feet, with very numerous sword-shaped leaves up to 8 feet in length. The scarlet flowers are borne in a thyrus about 3 feet long. (Adapted from Curtis's *Botanical Magazine*, pl. 6665.)

For previous introduction, see S. P. I. No. 23433.

51062 to 51068—Continued.

51064. EUCALYPTUS RISDONI Hook. f. Myrtaceæ.

A Tasmanian eucalypt rarely as tall as 50 feet, with smooth bark, pendulous branches, usually opposite lanceolate or heart-shaped leaves, and small flowers borne in axillary or lateral umbels. The wood is said to be rather poor. (Adapted from *Bentham, Flora Australiensis*, vol. 3, p. 203, and from *De Andrade, Manual do Plantador de Eucalyptos*, p. 219.)

51065. KENNEDIA MONOPHYLLA Vent. Fabaceæ.

(*Hardenbergia monophylla* Benth.)

An ornamental Australian leguminous vine with solitary obtuse leaflets up to 4 inches in length and numerous violet or rose-purple flowers borne in twos or threes in racemes. (Adapted from *Maiden, Flowering Plants and Ferns of New South Wales*, pt. 1, p. 55.)

For previous introduction, see S. P. I. No. 45790.

51066. SWAINSONA GALEGIFOLIA (Andrews) R. Br. Fabaceæ.

(*Colutea galegifolia* Sims.)

A low shrubby leguminous plant from New South Wales, with compound vetchlike leaves and scarlet-orange flowers borne on rather long axillary peduncles. (Adapted from *Curtis's Botanical Magazine*, pl. 792.)

The more common form in cultivation (variety *alba* Hort.) has pure white flowers.

51067. TELOPEA SPECIOSISSIMA (J. E. Smith) R. Br. Proteaceæ.

(*Embothrium speciosissimum* Smith.)

Waratah.

An Australian shrub 6 to 8 feet high, with obovate, unequally serrate, dark-green leaves and a headlike spike of brilliant red flowers. It is propagated by layering or seeds. (Adapted from *Curtis's Botanical Magazine*, pl. 1128.)

For previous introduction, see S. P. I. No. 44837.

51068. TRICONDYLIUS FRASERI (R. Br.) Kuntze. Proteaceæ.

(*Lomatia ilicifolia* R. Br.)

An erect branching shrub or sometimes a small tree, with ovate or lanceolate leaves, irregularly prickly toothed or lobed, and long, loose racemes of white or light-yellow flowers. The wood is light and very hard, with beautiful markings, and is easily worked. (Adapted from *Bentham, Flora Australiensis*, vol. 5, p. 536, and from *Maiden, Useful Native Plants of Australia*, p. 564.)

51069 to 51072.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Gustav Helmrich. Received July 20, 1920. Quoted notes by Mr. Helmrich.

51069. ARUNDINELLA BERTERONIANA (Schult.) Hitchc. and Chase.
Poaceæ. Grass.

"*Gjekerj* (tail of deer)."

"A tufted perennial grass with strong, slender, upright culms, 0.5 of a meter to 1 meter high, with long, narrow, folded, or involute blades and a many-flowered tawny panicle 20 to 30 centimeters long." (*Agnes Chase*.)

51069 to 51072—Continued.

51070. *CHAETOCILOA GENICULATA* (Lam.) Millsp. and Chase. Poaceæ. Grass.

"*Culue-k'im* (caterpillar grass)."

"A perennial grass producing short knotty branching rhizomes as much as 4 centimeters long. The culms are erect, spreading, or prostrate, up to 1 meter tall. The blades are flat, scabrous, and often glaucous, mainly straight, 20 centimeters long and 8 millimeters wide. The exserted panicle is yellow, purple, tawny, or greenish, 1 to 10 centimeters long and 4 to 8 millimeters thick. Native to open ground, salt marshes, and moist coast lands from Connecticut to Florida and Texas, in the interior north to Kansas and south through tropical America to Argentina and Chile." (*A. S. Hitchcock.*)

51071. *CHAETOCILOA SULCATA* (Aubl.) Hitchc. Poaceæ. Grass.
(*Setaria sulcata* Raddi.)

"*Hotz-kor* (scrape-leaf)."

"A perennial grass with robust culms as much as 4 meters tall, with flat blades, 1 meter long and 10 centimeters wide at the middle, tapering at each end. The green or purplish panicles are often 70 centimeters long. Native to southern Mexico, northern South America and north in the Windward Islands to Guadeloupe." (*A. S. Hitchcock.*)

For previous introduction, see S. P. I. No. 38776.

51072. *PASPALUM PANICULATUM* L. Poaceæ. Grass.

"*Gua-djue* (fodder of roe)."

A weedy branching perennial, commonly 1 meter tall, with harshly pubescent flat blades 20 to 30 centimeters long and 1.5 centimeters wide and very numerous slender racemes crowded in oblong panicles. Native to open or partly shaded savannas, mostly moist ground from Mexico and the West Indies to South America. (Adapted from *Hitchcock and Chase, Contributions from the National Herbarium, vol. 17, p. 317.*)

51073. *TRIFOLIUM RESUPINATUM* L. Fabaceæ. Clover.

From Cairo, Egypt. Seeds collected for Prof. S. C. Mason, arboriculturist, United States Department of Agriculture, by Thomas W. Brown, director, Horticultural Division, Ministry of Agriculture. Received July 20, 1920.

"A small prostrate clover common in the sod of the parks and gardens around Cairo, usually in heavy soils." (*Mason.*)

- 51074 and 51075. *BLAKEA* spp. Melastomaceæ.

From San Jose, Costa Rica. Seeds presented by Doña Amparo de Zeledón. Received July 23, 1920. Quoted notes by Sra de Zelodón.

51074. *BLAKEA* sp.

"An epiphyte with very large carmine-magenta flowers."

51075. *BLAKEA* sp.

"An epiphyte with very large carmine-magenta flowers."

51076 to 51084.

From Batum, Transcaucasia, Russia. Seeds presented by John Palibin, director, Botanic Garden, through Charles K. Moser, American consul, Tiflis, Transcaucasia. Received July 23, 1920. Quoted notes by Mr. Palibin.

51076 to 51084—Continued.

51076. *CICER ARIETINUM* L. Fabaceæ. Chick-pea.

"Cultivated in the the western part of Transcaucasia, harvested in 1919."

51077 and 51078. *CORYLUS AVELLANA* L. Betulaceæ. Hazelnut.

51077. "*Kobuletti*, considered the best variety in the commerce of Batum. Harvested in 1919."

51078. "The thin-shelled kind from Trebizond. Harvested in 1919."

51079 to 51084. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

51079. "A good kind, cultivated in the Kutais district. A short, thick bean with reddish brown marks and splotches on a white ground."

51080 to 51084. "Best kinds in Georgia, Transcaucasia; the beans of the best varieties are those with lilac-colored spots. From the Botanical Gardens of Batum."

51080. 1. Lilac spots on a light-tan ground.

51081. 2. Lilac spots on a dark-tan ground.

51082. 3. Clear grayish tan with a dark ring around the hilum.

51083. 4. Brownish tan with dark ring around the hilum.

51084. 5. Long, slender, dark-red bean.

51085. *PINUS HALEPENSIS* PITYUSA (Stev.) Gordon. Pinaceæ. Pine.

From Sukhum Kale, Caucasus. Seeds presented by J. Muszynski, director, Botanic Garden. Received July 31, 1920.

A much-branched bushy pine, found in mountainous regions of the western Caucasus and Asia Minor, especially in Georgia. It attains a height of 6 to 10 meters, with numerous spreading whitish branches and slender twigs. The very slender leaves are about 12 centimeters long, and the ovoid, slightly bent cones are quite small. (Adapted from *Beissner, Handbuch der Nadelholzkunde*, ed. 2, p. 421.)

51086 to 51094.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received July 26, 1920. Quoted notes by Mr. Popenoe.

51086 to 51090. *DAHLIA* spp. Asteraceæ. Dahlia.

"(Nos. 425 to 429. July 6, 1920.) A collection of Costa Rican tree dahlias presented by Sr. Alfredo Brade, of San Jose. I believe there are at least two species represented. They will prove interesting to dahlia breeders."

51086. *DAHLIA* sp.

"(No. 425.) Large double lilac pink. Considered by Sr. Brade the finest variety of the collection, the flowers being very large and very double."

51087. *DAHLIA* sp.

"(No. 426.) Small-flowered half-double pale lilac pink. This variety flowers earlier in the season than the others in the set, and for this reason is of particular interest for California, where most of the tree dahlias are cut down by frost before they come into bloom."

51086 to 51094—Continued.

51088. DAHLIA sp.

"(No. 427.) Small double-flowered lilac. This variety flowers later than the others."

51089. DAHLIA sp.

"(No. 428.) Single white. This looks much like a form of *Dahlia maxonii*. The preceding three varieties all have leaves and stems tinged with purplish, and leaves distinct in form from the present number. In this variety and in No. 429 [S. P. I. No. 51090] the leaves are light green, with the leaflets long pointed."

51090. DAHLIA sp.

"(No. 429.) Double white, like the single white except that the flowers are double."

51091 and 51092. GUILIELMA UTILIS Oerst. Phœnicaceæ. Palm.
(*Bactris utilis* Benth. and Hook.)

51091. "(No. 424. July 6, 1920.) Plants of the *seedless pejibaye*. I have already described the pejibaye in connection with a shipment of seeds made under No. 391a [S. P. I. No. 50679]. The suckers or offshoots sent under the present number, however, are of a choice seedless form growing in the garden of Sr. Alfredo Brade, in San Jose. Sr. Brade has generously presented us with the only two offshoots at present available, in the hope that they will grow in Florida. The *seedless pejibaye* is rare in Costa Rica, and very highly esteemed, as it should be. Its propagation must necessarily be slow, because of the very few offshoots which each palm produces. The only question is, will the progeny of these palms invariably retain the valuable characteristic of seedlessness? It seems possible that seedlessness may be due, in some instances at least, to local peculiarities of climate which affect the pollination of the flowers; and in such instances, the characteristic will not, of course, be heritable. The matter has not yet been sufficiently investigated, however, to permit any conclusions to be reached; and for the present we should make an effort to test all available seedless forms in our tropical dependencies and in southern Florida."

For previous introduction, see S. P. I. No. 44268.

51092. "(No. 431. July 6, 1920.) Plants of *seedless pejibaye*, presented by Doña Amparo de Zeledón, of San Jose. See remarks concerning seedless pejibayes under No. 424 [S. P. I. No. 51091]. The offshoots forwarded under the present number have been obtained for us by Sra de Zeledón from palms known by her to produce seedless fruits. The value of her gift can be appreciated only by those who know how difficult it is to procure offshoots of the seedless pejibaye."

For previous introduction, see S. P. I. No. 44268.

Fruits of this seedless form are shown in Plate VIII.

51093. PASSIFLORA QUADRANGULARIS L. Passifloraceæ. Giant granadilla.

"(No. 430. July 6, 1920.) Cuttings of *granadilla real*. From the garden of Sr. Alfredo Brade, in San Jose. Sr. Brade states that this vine is

51086 to 51094—Continued.

a free bearer, a condition quite rare with *Passiflora quadrangularis*. It is introduced for trial because of the possibility of its proving better than the average form."

51094. *RUBUS ERIOCARPUS* Liebm. Rosaceæ.

Raspberry.

"(No. 423a. July 6, 1920.) Seeds of *mora*. From the upper slopes of the Volcano Irazu, at 9,000 to 10,000 feet altitude. This berry, which is found only at altitudes of 9,000 feet and higher, is quite distinct from the several species which I have collected in Costa Rica at lower levels, mainly between 4,000 and 6,000 feet. It is more of a raspberry than a blackberry in character. The slender canes, which are of a deep reddish green color, grow to 8 or 10 feet in length and branch profusely, forming an impenetrable tangle. The leaves are trifoliolate and the flowers small and white. The fruits, which are produced in good-sized clusters, are oblong or oblong-oval, up to an inch in length, and composed of numerous small deep-red drupelets. The flavor is distinctly that of the raspberry and is very agreeable. The plant is a profuse bearer, and seems well worthy of trial in the southern United States."

51095 to 51097.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Gustav Helmrich. Received July 31, 1920. Quoted notes by Mr. Helmrich.

51095. *ISCHAEMUM LATIFOLIUM* (Spreng.) Kunth. Poaceæ.

Grass.

"*Cux-kub* (Indian). A very good fodder for horses."

A stout decumbent grass, rooting at the lower nodes, with glabrous blades 20 centimeters long and 3 centimeters wide and a fan-shaped inflorescence. Native to moist shady places in southern Mexico and the Lesser Antilles to Brazil and Ecuador. (Adapted from *Hitchcock and Chase, Contributions from the U. S. National Herbarium*, vol. 18, p. 332.)

51096. *PASPALUM HUMBOLDTIANUM* Fluegge. Poaceæ.

Grass.

"*Taki pachadja* (white grass)."

"A handsome perennial grass producing strong scaly rootstocks, with tufted culms, 40 to 80 centimeters high, erect from a woody, decumbent base. The nodes are densely bearded with upwardly appressed white hairs; the flat, spreading blades, 8 to 18 centimeters long, 8 to 15 millimeters wide, are slightly narrowed toward the base into a stiff point. The margins are usually stiffly fringed with hairs, and the panicles, 10 to 15 centimeters long, are of pale lax, spreading spikelets, beautifully fringed with long, white glistening hairs. Native to rocky ground on the highlands from central Mexico to Argentina." (*Agnes Chase*.)

51097. *PANICUM MULTIRAMEUM* Scribn. Poaceæ.

Grass.

"*Chachach onim* (basket grass)."

A delicate grass with small open primary panicles of pubescent spikelets, lanceolate blades less than 10 times as long as broad, and basal leaves which are distinctly different from those of the culm, forming a winter rosette; the culms are at first simple, later becoming much branched. The autumnal phase is decumbent with the branches in fan-shaped clusters. Native to banks and dry, open ground from southern Mexico to Guatemala, and also in Jamaica. (Adapted from *Hitchcock and Chase, Contributions from the U. S. National Herbarium*, vol. 18, p. 332.)

51098. CONVULVULUS MAURITANICUS Boiss. Convolvulaceæ.**Morning-glory.**

From Pasadena, Calif. Plants presented by D. W. Coolidge, Coolidge Rare-Plant Gardens. Received August 4, 1920.

The blue rock bindweed is one of the most beautiful and graceful of all our hardy bindweeds. It is entirely free from rampant tendencies and is remarkable for its persistent flowering and neat elegant habit. Each plant forms a dense tuft and throws up innumerable long drooping shoots, each terminated by a cluster of clear blue flowers. Easily grown from cuttings. (Adapted from *The Garden*, vol. 39, p. 52.)

51099. PASSIFLORA MACROCARPA Masters. Passifloraceæ.

From Trujillo, Peru. Seeds presented by A. Martin Lynch, Sayapullo. Received August 9, 1920.

"The fruit grows to the size of a man's head and is one of the most delicious fruits grown in Peru, where the juice and pulp are made into a most delicious beverage." (*Alberto Larco Herrera*.)

51100. SYZYGium CUMINI (L.) Skeels. Myrtaceæ. Jambolan.

(*Eugenia jambolana* Lam.)

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received August 11, 1920.

"Seeds of the *duhat*, one of our most popular small fruits." (*Wester*.)

A tropical Asiatic tree 8 to 15 meters high, with ovate, coriaceous, shining leaves and numerous yellow flowers crowded in terminal or axillary panicles followed by loose clusters of 2 to 7 dark-purple or black, smooth, shining, ovoid fruits, 25 millimeters long and 20 millimeters across, with rather large clingstone seeds. The thin skin adheres to the sweet, juicy, pleasant, subacid pulp which is white tinged with purple; the texture somewhat resembles that of the cherry. The sugar content is 12.20 per cent, the protein 0.80 per cent, and the acidity (as malic acid) 87 per cent. The fruit may be eaten out of hand with relish, and it makes an excellent jelly. In India it is sometimes made into wine. It is probably of prehistoric introduction into the Philippines and is common throughout the archipelago. (Adapted from *The Philippine Agricultural Review*, vol. 10, p. 13.)

For previous introduction, see S. P. I. No. 43217.

51101. CORDIA sp. Boraginaceæ.

From Santiago de las Vegas, Cuba. Seeds presented by Gonzalo M. Fortun, director, Agricultural Experiment Station. Received August 17, 1920.

"A plant generally known in Cuba as *vomitel*; it is also called *gutaperi*. The fruits of this plant are edible, and we were told that an excellent preserve is made from them. The tree when loaded with its glorious heads of crimped, salver-shaped orange flowers makes a magnificent appearance." (*Fortun*.)

51102. CUCUMIS MELO L. Cucurbitaceæ.**Muskmelon.**

From Paris, France. Seeds presented by Prof. S. C. Mason, arboriculturist, United States Department of Agriculture. Received August 17, 1920.

"Immediately after arriving in Paris I noticed peculiar and very fine cantaloupe melons displayed in the windows of the groceries, as we would call them.

These melons continue all through August, they tell me, and are grown in open gardens, though I suspect that they are started in frames. They are roundish, a good deal oblate, deeply ribbed, inclined to be rough and warty (but not netted), and have a very distinct 'areole' (or smooth circle) around the calyx, sometimes as much as 2 inches in diameter. They range in size, apparently the same variety, from 4 inches in diameter up to 8 or even 9 inches, and in retail price from 2½ to 12, 14, and even as high as 17 francs for the finest specimens. In good restaurants one portion (about 8 or 10 to a large melon) is served for 4½ francs. The melons are picked when they become a mottled gray-green in color, never being allowed to ripen on the vines. They appear to carry remarkably well, but when well matured they are a dirty yellow color, not very attractive. The flesh is rich orange-yellow, thick, firm, not at all netted, and only moderately sweet but very satisfying. I am sending you the entire lot of seeds from one, of which I had a portion in the Grand Café de l'Alma, close to the Ponte l'Alma. I am sure I have never seen a melon anything like this type in the United States." (*Mason.*)

51103 and 51104. AMYGDALUS COMMUNIS L. Amygdalaceæ.
(*Prunus amygdalus* Stokes.)

From Gedera (Katra), near Jaffa, Palestine. Budwood presented by Amram Khazanoff. Received August 17, 1920. Quoted notes by Mr. Khazanoff.

"The two standard almond varieties of Palestine, which I consider worthy of the interest of almond growers in the United States. This budwood was selected with a view to possible bud variation."

51103. "Greek almond."

51104. "Victoria almond."

51105. PERSEA AMERICANA Mill. Lauraceæ. Avocado.
(*P. gratissima* Gaertn. f.)

From Rio Frio, near Santa Marta, Colombia. Budwood collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received August 19, 1920.

"(No. 432. Avocado No. 46. August 5, 1920.) A very choice variety of avocado, said to be the earliest known in the Rio Frio region. This is a fine oval fruit, green in color, about 1½ pounds in weight, with thick meat of excellent quality." (*Popenoe.*)

51106. OTOPHORA FRUTICOSA (Roxb.) Blume. Sapindaceæ.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received April 24, 1920. Numbered August 30, 1920.

"*Balinaonao*. A small tree with dark-red to black fleshy fruits about one-third the size of grapes, in bunches like grapes, up to 200 fruits in a bunch. The flesh is sweet and edible but rather insipid. The seeds taste like chestnuts roasted and are eaten to a slight extent. The plant is of slight economic value but is quite ornamental in the fruiting season by reason of its large bunches of dull rose-red fruits. The tree grows at Lamac and may succeed in Florida." (*Wester.*)

51107 to 51109.

From Buenos Aires, Argentina. Seeds presented by Benito Carrasco, director, Botanic Garden. Received July 12, 1920.

51107. *ASPIDOSPERMA PEROBA* Sald. Gama. Apocynaceæ.

This tree, whose wood is used in naval construction, has a thin, clear ash-colored bark, cracked longitudinally; a decoction of the inner bark is used medicinally. The heartwood is of rare beauty, with a wavy pattern. The tree is distinguished by its spreading, obovate-oblong, undulate leaves. (Adapted from *Saldanha da Gama, Configuração descriptiva de todos os órgãos fundamentais das principais madeiras . . . da Provincia do Rio de Janeiro, vol. I, p. 140.*)

For previous introduction, see S. P. I. No. 42324.

51108. *GOMPHRENA ROSEA*. Griseb. Amaranthaceæ.

An herbaceous perennial, erect or ascending, found in stony situations in Cordoba, Argentina. The leaves are lanceolate and rather short, and the pinkish flowers are borne in a terminal head. (Adapted from *Grisebach, Plantae Lorentzianae, p. 32.*)

For previous introduction, see S. P. I. No. 33966.

51109. *PETUNIA VIOLACEA* Lindl. Solanaceæ.

Petunia.

This petunia is a native of Buenos Aires, Argentina. With its dark-green oval leaves and profusion of purple flowers which appear from August to October in its native habitat, it forms a most attractive ornamental plant. (Adapted from *Edwards' Botanical Register, pl. 1626.*)

51110. *AELUROPUS BREVIFOLIUS* (Koen.) Nees. Poaceæ. **Grass.**

From Cairo, Egypt. Seeds presented by Dr. R. H. Forbes, Société Sultanienne d'Agriculture. Received September 8, 1920.

"A dwarf creeping grass with dense globose flower clusters, growing in saline soil both on the seacoast and inland from the Mediterranean coasts to Afghanistan and India. The species is very variable, with both glabrous and pubescent forms. Duthie in 'The Fodder Grasses of Northern India,' says of it: 'It is characteristic of saline tracts in the western parts of India, where it appears to take the place of dub (*Cynodon dactylon*), which it somewhat resembles in habit.'" (*C. V. Piper.*)

Introduced for testing as a lawn grass under alkaline conditions.

51111. *ANTHEPHORA PUBESCENS* Nees. Poaceæ.

Grass.

From Pretoria, Transvaal. Seeds presented by Sydney Steub, Division of Botany, Department of Agriculture. Received August 24, 1920.

"Considered one of the best pasture grasses in parts of Bechuanaland where it grows." (*Agricultural Journal of South Africa, vol. 3, No. 17, p. 135.*)

51112. *XANTHOSOMA SAGITTAEFOLIUM* (L.) Schott. Araceæ. **Yautia.**

From Buitenzorg, Java. Tubers presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received September 18, 1920.

"Received under the varietal name *romah*, which, according to a previous introduction (S. P. I. No. 17238) is a *Colocasia*." (*R. A. Young.*)

51113 to 51115.

From Rawalpindi, Punjab, India. Seeds presented by Dr. R. R. Stewart, Gordon College. Received July 7, 1920. Quoted notes by Doctor Stewart.

51113. *TULIPA STELLATA* Hook. Liliaceæ.

Tulip.

A very delicate species which is certainly a valuable acquisition to our gardens. It is remarkable for the narrowness of the petals and their spreading out almost flat in the middle of the day when the sun shines, and closing again in the evening. The small broadly ovate bulb, capped with three or four lanceolate segments thickly lined with fulvous hair, flowers in two months. In India, where the plant is common, the bulbs are frequently eaten by natives and are sold for that purpose in some of the bazaars. The terete, glaucous stem, nearly 2 feet high in the cultivated species, bears four to five linear-lanceolate leaves. The dainty, erect flowers, oblong in the bud, are solitary or two upon the same stem. The lanceolate, concave petals are pure white, with a faint tinge of pink and green at the points, on the outside, and bright yellow at the base within. Three of the petals are longer than the rest and sometimes have a single tooth. (Adapted from *Curtis's Botanical Magazine*, pl. 2762; and Watt, *Dictionary of the Economic Products of India*, vol. 6, pt. 4, p. 203.)

51114. *ZIZIPHUS JUJUBA* Mill. Rhamnaceæ.
(*Z. sativa* Gaertn.)

Jujube.

"Wild jujube bought in market. A form widely cultivated in the Punjab."

51115. *ZIZIPHUS* sp. Rhamnaceæ.

Jujube.

"Wild jujubes bought in market."

51116 to 51125.

From San Jose, Costa Rica. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received July 14, 1920. Quoted notes by Mr. Popenoe.

51116. *BUNCHOSIA GLANDULIFERA* H. B. K. Malpighiaceæ.

"(No. 412. July 1, 1920.) *Cereza*. Plants presented by Carlos Wercklé, of El Coyolar, Costa Rica.

"A small, slender tree, reaching about 20 feet in height. It bears short racemes of yellow flowers which are followed by elliptic, bright-red fruits about 1 inch long. Mr. Wercklé thinks the fruit nearly as good in quality as that of the Japanese persimmon; in my opinion, however, it is considerably inferior. The thin skin surrounds a large elliptic seed and a small quantity of red pulp which, like that of the persimmon, must not be eaten until it is very soft."

51117. *CASTILLA NICOYENSIS* O. F. Cook. Moraceæ.

Nicoya rubber.

"(No. 416a. July 1, 1920.) Seeds collected from a tree in the doorway of the ranch house at El Coyolar, Costa Rica. It is a Central American rubber tree, said to be a more vigorous grower than *Castilla elastica* and less exacting in its soil requirements."

For previous introduction, see S. P. I. No. 42386.

51116 to 51125—Continued.

51118. *Cordia nitida* Vahl. Boraginaceæ.

"(No. 415a. July 1, 1920.) Seeds of *muñeco*. The *muñeco* is commonly planted in and about San Jose as a street tree, or as an ornamental tree in parks and gardens. It reaches a height of 40 feet, and forms a broad, shapely crown of deep-green foliage. It is quick growing and rather soft wooded, so that limbs are sometimes broken off by storms. The orange-red fruits, which are produced in clusters 4 to 6 inches across, are individually the size of small cherries. They are not edible, but since they remain on the tree a long time they are of decorative value."

51119. *Crotalaria verrucosa* L. Fabaceæ.

"(No. 413a. July 1, 1920.) Seeds of a plant found abundantly at Puntarenas, in abandoned or uncultivated places close to the seashore. It seems less woody in character than *Crotalaria retusa*, and likely, therefore, to make a better crop for use as a green manure. It reaches about 18 inches in height, and bears attractive white and pale-blue flowers. Evidently it is an annual. It should be tested as a cover crop in the South, especially on sandy lands."

51120. *Cupania* sp. Sapindaceæ.

"(No. 414a. July 1, 1920.) *Paraiso*. Seeds presented by Carlos Wercklé, of El Coyolar, Costa Rica. Mr. Wercklé states that this is a handsome ornamental tree, indigenous in the region about Coyolar, and probably not described botanically. It should be tested in southern Florida."

51121. *Paspalum notatum* Fluegge. Poaceæ.

Grass.

"(No. 418a. July 1, 1920.) *Gengibrillo*. Seeds presented by Alfredo Quiros. From sea level up to 5,000 feet this is probably the most important of the pasture grass cultivated in Costa Rica; above 5,000 or 6,000 feet it is injured by frost and is not, therefore, extensively planted. In the lowlands it is especially esteemed; it makes a compact sod, crowding out weeds and other grasses, and affording an abundance of nourishing green forage, eaten readily by both horses and cattle. It rarely grows more than a foot in height, and where pastured constantly does not often reach more than 6 inches. For trial in the Everglades region of southern Florida."

For previous introduction, see S. P. I. No. 37996.

51122. *Polakowskia tacaco* Pittier. Cucurbitaceæ.

"(No. 422. July 1, 1920.) Seeds of *tacaco*. Among Costa Ricans this is one of the most popular of all vegetables, and it is regularly sold in the market of San Jose during a large part of the year.

"In general character the *tacaco* suggests the chayote. The plant, which is commonly cultivated on arbors or allowed to climb over trees, has a leaf resembling that of the chayote in shape but differing in texture; and the fruit, which falls to the ground when mature, is about 3 inches long, elliptic in outline. Frequently it has a few short spines about the base; elsewhere it is smooth. When boiled it is considered to have a richer flavor than the chayote, but the flesh is somewhat fibrous.

"The *tacaco* should be tried in the chayote-growing regions of the United States. Doubtless it would be possible to reduce the proportion of fiber and otherwise improve the fruit by selection."

For previous introduction, see S. P. I. No. 47329.

51116 to 51125—Continued.

51123. *RUBUS ADENOTRICHOS* Schlecht. Rosaceæ.

“(No. 417a. July 1, 1920.) *Mora*. Seeds of a wild blackberry from the roadside between Cartago and Tierra Blanca, at an altitude of about 6,000 feet. A vigorous, bushy species reaching about 8 feet in height and producing in abundance blackberries somewhat less than 1 inch long and of good flavor. Of especial interest for breeding purposes.”

51124 and 51125. *WERCKLEA INSIGNIS* Pitt. and Standl. Malvaceæ.

51124. “(No. 419. July 1, 1920.) Cuttings presented by Dr. Ricardo Jiménez Núñez, of Guadalupe, San Jose. A rare and handsome plant, discovered a few years ago in the mountains near La Palma, Costa Rica. It is an arborescent shrub about 15 feet in height, usually branching close to the ground to form several main limbs, which in turn branch (though sparingly) to form long stiff shoots, each crowned with a cluster of orbicular leaves nearly a foot in breadth. The flowers, which appear among the leaves at the ends of the branches, are similar in size and form to those of *Hibiscus rosa-sinensis*, the common hibiscus of the Tropics. In color, however, they are quite distinct from those of the hibiscus, being bright lilac, turning to golden in the throat. Since it is found in Costa Rica at an altitude of 5,000 feet, the species may be sufficiently hardy to succeed in southern Florida. It probably requires a moist climate, and in its indigenous condition it grows upon heavy soil.”

51125. “(No. 419a. July 1, 1920.) Seeds of the shrub of which cuttings were sent under No. 419 [S. P. I. No. 51124].”

51126. *MANIHOT ESCULENTA* Crantz. Euphorbiaceæ. Cassava.
(*M. utilissima* Pohl.)

From Honolulu, Hawaii. Cuttings presented by J. M. Westgate, agronomist in charge, Agricultural Experiment Station. Received August 10, 1920.

“*Wiebke* cassava. A very superior variety from the island of Kauai, selected from volunteer seedlings by a man named Wiebke, in whose honor the variety has been named. Not only does it yield better than three long-established varieties [*Sweet*, white, early-maturing culinary cassava; *Bitter*, red, late-maturing stock-feed cassava; *Martin's Intermediate* cassava], but it also has the habit of remaining tender or at least not becoming woody as do most of our varieties if left growing several months after maturity.

“*Wiebke* cassava promises to be superior to any of the above-mentioned varieties for culinary, feeding, and starch-manufacturing purposes. Harvested on June 15, at the end of a 15-month growing period, at the Haiku substation, it yielded 17,776 pounds per acre of clean roots. This result was obtained on rough pineapple land, without fertilization and with little or no cultivation aside from the initial plowing under of the old pineapple stumps and one cross-plowing.

“In an 18-month growing period completed in August, 1920, on soil fertilized with 500 pounds of phosphates, half super and half reverted, the *Wiebke* cassava yielded 19,111 pounds of roots per acre; on soil fertilized with 1,000 pounds of phosphates, half super and half reverted, it yielded 22,211 pounds of roots per acre. The starch recovered was 20 per cent. The crops were grown on old pineapple land with a view to testing their adaptation as a rotation crop.” (*F. G. Krauss*.)

51127 to 51141.

From Buitenzorg, Java. Seeds presented by Dr. I. Boldingh, acting head of the Division of Plant Breeding, Java Department of Agriculture. Received August 20, 1920.

51127. ARECA CATECHU L. Phœnicaceæ.

Betel-nut palm.

Variety *alba*. The species is one of the most important and valuable palms and is widely distributed throughout the East; it forms an erect, slender stem, bearing at its summit a crown of graceful leaves, among which hang great clusters of egg-shaped fruits, each one formed when ripe of a thick fibrous pericarp, inclosing one seed about the size and shape of an ordinary nutmeg. Native to Cochin China and the Malay Archipelago; it does not succeed at any distance from the sea nor at an altitude above 3,000 feet. The average yield of a betel-nut palm is estimated at 300 fruits. The chief use of the seed is as an ingredient in the preparation of pan for chewing, a universal practice among all classes. The seed or nut is found in all the bazaars either whole, sliced, or cut into small pieces, the chewing of which is said to stimulate digestion and to prevent dysentery. In the preparation of pan use is made of lime, catechu, cardamoms, cloves, and other ingredients. Areca nuts are used in medicine because of their astringent properties, and when reduced to charcoal and finely powdered they are also used as a dentifrice. (Adapted from *The Garden*, vol. 64, p. 282.)

51128. CARYOTA MITIS Lour. Phœnicaceæ.

Palm.

A palm, 15 to 25 feet in height, with a low, stoloniferous stem and scurfily villous petioles, leaf sheaths, and spathes; the few, very large, broad, bipinnatisect leaves are 4 to 9 feet long. The bluish black fruits are half an inch in diameter. Native to Mauritius. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 423.)

• For previous introduction, see S. P. I. No. 24616.

51129. DAMMARA ALBA Rumph. Pinaceæ.

(*Agathis loranthifolia* Salisb.)

A splendid tree, up to 100 feet high, with a stem 8 feet in diameter, straight and branchless for two-thirds of its length. It is of great importance on account of its yield of the transparent dammar resin, extensively used for varnish. Native to the Indian Archipelago and mainland, extending to the Philippine Islands. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 161.)

For previous introduction, see S. P. I. No. 34071.

51130. DRYMOPHLOEUS sp. Phœnicaceæ.

Palm.

Received as *Actinophloeus macarthurii*, for which a place of publication has not been found.

51131. LATANIA COMMERSONII Gmel. Phœnicaceæ.

Palm.

A dioecious palm 40 feet high, native to Mauritius, with dark-green fan-shaped leaves, 3 feet long, paler beneath, the blade deeply laciniate; the veins and margins of the lanceolate segments are tinged with red. The petioles, 4 to 6 feet long, are slightly tomentose with smooth margins, spiny in young plants. The globose drupes are 1½ inches in diameter. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 381.)

For previous introduction, see S. P. I. No. 45960.

51127 to 51141—Continued.

51132. LICUALA RUMPHII Blume. Phœnicaceæ.

Palm.

A showy dwarf fan palm grown for its peculiar habit and handsome foliage. The slender stem bears a crown of long-petioled roundish leaves, 3 or more feet in diameter, with 12 to 15 segments, the inner ones 2 feet long and 1 foot wide at the apex, the lateral ones, 16 inches long and 4 inches wide, oblique; the petioles are spiny below. The simply branched spadix, 4 to 5 feet long, bears ellipsoid fruits. Native to Celebes and Borneo. (Adapted from *Blume, Rumphia*, vol. 2, p. 41.)

51133. NEPHROSPERMA VAN-HOUTTEANUM (Wendl.) Balf. f. Phœnicaceæ.

Palm.

A monœcious palm, 20 to 35 feet high, native to the Seychelles, with pinnate glabrous leaves, 5 to 7 feet long, and leaflets 3 to 3½ feet in length; the smooth petiole is under a foot long and the woolly, sparsely spiny leaf sheath is 1½ to 2½ feet long. The spadix is 4 to 8 feet long and bears orange-red fruits, half an inch in length. (Adapted from *Baker, Flora of Mauritius and the Seychelles*, p. 386.)

For previous introduction, see S. P. I. No. 45965.

51134. ONCOSPERMA FILAMENTOSUM Blume. Phœnicaceæ.

Palm.

A very elegant palm with a trunk 30 to 40 feet high, distinctly annulate and armed, and a thick, graceful crown. The pinnate leaves are 10 to 12 feet in length with pinne about 2 feet long. This palm is quite common on the borders of paddy swamp in Malacca. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 464.)

For previous introduction, see S. P. I. No. 45962.

51135. PANDANUS FURCATUS Roxb. Pandanaceæ.

Variety *lais*.

This screw pine occurs in India up to altitudes of 4,000 feet, and will be likely to bear a temperate climate and give a stately plant for scenic group planting. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 347.)

51136. PANDANUS LABYRINTHICUS Kurz. Pandanaceæ.

A shrub 15 to 20 feet in height, with erect-spreading branches and a slender, warty, glabrous stem sending out stiltlike, intricate aerial roots. The somewhat leathery linear leaves, 4 to 6 feet long, are shining above, glaucescent below, the margin and midrib densely spiny with curving white spines. The green, linear spathes inclose the eight to nine spikes of elliptic, oblong, drooping fruit clusters. The drupes are shining olive green, finally golden. (Adapted from *Miquel, Annales Musei Botanici Lugduno-Batavi*, vol. 2, p. 53.)

51137. PANDANUS POLYCEPHALUS Lam. Pandanaceæ.

A small diœcious Indian tree with spiny-margined, trifarious, narrow, coriaceous leaves. The red, spicate, subglobose drupes have spinescent crowns. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 487.)

Received as *Pandanus kurzianus*, which is now generally referred to *P. polycephalus*.

51138. PANDANUS TECTORIUS Parkins. Pandanaceæ.

"*Aggak*. A small tree with a trunk which usually begins to branch very low, the branches often bending downward nearly to the ground;

51127 to 51141—Continued.

the leaves are long, sword shaped, armed with spines on the margin and keel, differing in color and texture from those of Guam, being glaucous and of great textile strength. Only one sex occurs on the island, so that it must be propagated by cuttings. These take root readily; indeed, a branch lying on the surface will often send out roots which penetrate the ground. The natives frequently plant this species in hedges, which serve the double purpose of defining their boundaries and of furnishing material for cordage and for mats, hats, and bags.

"Dried leaves stripped of the rigid, spiny keel are used either in their simple form or twisted together as lashings for the framework of buildings and for securing thatch to the roof. For making mats, hats, and bags, the leaves are steeped in hot water, scraped, and split into strips of various widths according to the fineness of the fabric desired, dried in the sun, and thoroughly cleaned. Mats are braided with the strips crossing diagonally, as in the mats of the eastern Polynesians, not woven with warp and woof, as are the mats of many of the Micronesians. Some of the hats and small bags are very fine. In the early days the natives of Guam made their sails of aggak leaves. The plant was undoubtedly introduced into the island in prehistoric times." (*Safford, Useful Plants of Guam, p. 344.*)

For previous introduction, see S. P. I. No. 44779.

51139. ROYSTONEA REGIA (H. B. K.) O. F. Cook. Phœnicaceæ.

(*Oreodoxa regia* H. B. K.)

Cuban royal palm.

The royal palm grows wild throughout the Antilles and also in southern Florida, Mexico, Central America, and in the northern part of South America. It is especially abundant on damp, fertile soil, such as is suitable for tobacco cultivation. In the west of Cuba it is found on land which was formerly cultivated but has since been abandoned. The trunk is often 70 to 85 feet high, with a diameter of nearly 2 feet. The wood is considered unsuitable for constructive purposes, but the external layer of hard wood is much used for walking sticks, stakes, fences, posts, tables, coffee mortars, and the partition walls of houses. The most useful portion of the tree is the yagua, or dried leafstalk. The large terminal leaves have clasping leafstalks, 4 to 9 feet long, and as wide as the circumference of the stem. Every three or four weeks a leaf falls; this is damped, flattened by means of weights, and dried. The dried leafstalks are sold per truss and provide the best packing material for export tobacco. The leaf bases supply a fiber from which ropes and string are made. In Cuba yagua is also used in the construction of the poorest houses. The terminal bud is edible, but its removal causes the death of the tree. This is one of the most elegant palms for planting in avenues. (Adapted from *La Hacienda, vol. 8, p. 91.*)

For previous introduction, see S. P. I. No. 34747.

51140. SCHEELEA INSIGNIS (Mart.) Karst. Phœnicaceæ.

Palm.

A palm with an erect stem, 50 to 60 feet in height, with 15 to 20 smooth, erect, pinnate fronds crowded into a dense crown. The yellowish green, smooth, fleshy, pistillate flowers are sessile on a spadix inclosed in a green spathe. The pale yellowish white, staminate flowers are inconspicuous. (Adapted from *Martius, Historia Naturalis Palmarum, vol. 2, p. 133.*)

51127 to 51141—Continued.

51141. *TILMIA CARYOTAEOFOLIA* (H. B. K.) O. F. Cook. Phœnicaceæ.(*Martinezia caryotaefolia* H. B. K.)

Palm.

Spiny fishtail. A small graceful Colombian palm, 30 feet in height, with an erect, closely ringed stem copiously armed with slender stiff black spines, 2 to 3 inches long; the rachis and midribs also bear these spines, though not so profusely. The spreading and drooping bright-green pinnate leaves, 4 to 5 feet long, are terminal. Each elongate leaflet is 9 to 12 inches long, more or less 3-lobed, and inserted by a broad base to the scurfy rachis. The yellow-green pistillate flowers are followed by globose drupes. (Adapted from *Curtis's Botanical Magazine*, pl. 6854.)

For previous introduction, see S. P. I. No. 25944.

51142. *GUNDELIA TOURNEFORTHII* L. Asteraceæ.

From Jerusalem, Palestine. Seeds presented by Mr. J. Ettinger, director, Agriculture and Colonization Department, Zionist Commission. Received August 21, 1920.

Accoub de Syrie. A spiny composite from Persia with buttonlike flower buds, about the size of a large strawberry, which, when boiled and served with butter, make an extremely satisfactory dish. This delicious vegetable is said to be the equal of asparagus and more delicate in flavor than artichokes. The plant is perennial, requires four years to attain maximum production, and is as long lived, perhaps, as asparagus. (Adapted from *Bulletin, Société de National Acclimatation de France*, vol. 34, p. 450.)

51143 to 51154.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky, Jardin d'Acclimatation. Received August 24, 1920. Quoted notes by Doctor Proschowsky.

51143. *ALBIZZIA CHINENSIS* (Osbeck) Merr. Mimosaceæ.(*A. stipulata* Bolv.)

"A small tree."

For previous introduction, see S. P. I. No. 42356.

51144. *ELAEODENDRON CAPENSE* Eckl. and Zeyh. Celastraceæ.

"A small evergreen tree of very regular, straight growth; very hardy here."

51145. *GENISTA MONOSPERMA* (L.) Lam. Fabaceæ.

"A very graceful bush, much cultivated here for its beautiful white, fragrant flowers which are exported in early spring. Very resistant to drought."

For previous introduction, see S. P. I. No. 10698.

51146. *GLADIOLUS SEGETUM* Ker. Iridaceæ.

Gladiolus.

"One of the most beautiful wild flowers here. Might perhaps be used for hybridization, if such has not yet been the case."

For previous introduction, see S. P. I. No. 27844.

51147. *GREWIA OCCIDENTALIS* L. Tiliaceæ.

"A large evergreen bush with violet flowers."

51148. *LIMONIUM FRUTICANS* (Webb) Kuntze. Plumbaginaceæ.(*Statice fruticans* Webb.)

Sea lavender.

51143 to 51154—Continued.

"One of the plants cultivated here in early spring for cut flowers for export. Will grow in the driest places. Needs sunny exposure."

For previous introduction, see S. P. I. No. 48030.

51149. MALVASTRUM CAPENSE (L.) Garke. Malvaceæ.

"An evergreen bush with rose-colored flowers."

51150. RONDELETIA AMOENA (Planch.) Hemsl. Rubiaceæ.

"An evergreen bush or small tree with beautiful rose-colored flowers; hardy here."

51151. SPARTIUM JUNCEUM L. Fabaceæ.

Spanish broom.

"Bush of very regular globular growth when in open ground. One of the glories of the Mediterranean vegetation, when covered with its thousands of light-yellow flowers."

For previous introduction, see S. P. I. No. 43666.

51152 to 51154. WIGANDIA spp. Hydrophyllaceæ.

"These Wigandias, forming bushes several meters in height, are naturalized in my garden and spring up everywhere, especially on vertical walls, slopes, etc. They are strikingly ornamental with their enormous evergreen leaves and abundant flowers."

51152. WIGANDIA CARACASANA H. B. K.

"A plant with large dark-green leaves and violet flowers."

For previous introduction, see S. P. I. No. 43671.

51153. WIGANDIA sp.

"A plant with large, dark yellowish green leaves and violet flowers. In distinction from other Wigandias, this species has no stinging hairs."

Received as *W. chilensis*, a horticultural name for which a place of publication has not been found.

51154. WIGANDIA sp.

"This plant bears large grayish green leaves covered on the under side with white tomentum."

Received as *W. imperialis*, a horticultural name for which a place of publication has not been found.

51155. MADHUCA INDICA Gmel. Sapotaceæ.

Mowra tree.

(*Bassia latifolia* Roxb.)

From Allahabad, India. Seeds presented by William Bembower, Allahabad Agricultural Institute. Received August 24, 1920.

Mowra. One of the most useful plants found in the plains and forests of the East Indies; the tree yields food, wine, and oil. It is 40 to 50 feet high, with a short trunk and numerous spreading branches, forming a close, shady, rounded crown. It thrives on dry and stony ground in all parts of central India and is protected by the natives. The part eaten, the succulent corolla, is rich in sugar and is highly valued as a foodstuff and as the source of a spirituous liquor. Some conception of the value put upon the flowers for these purposes by the natives is gained from an estimate made some years ago, that in the Central Provinces over 1,000,000 people used these corollas as a regular article of food, each person consuming about 80 pounds per annum; throughout India they are looked upon as a valuable reserve in famine years.

The *mowra* tree sheds its leaves in February and the flowers appear in March and April, at which time the ground beneath the trees is carefully cleared.

The flowers have a thick, juicy, globe-shaped corolla of a pale-cream color, inclosed at the base in a velvety chocolate-colored calyx. The corollas fall in the early hours of the morning and are collected by women and children. They are spread out to dry on mats in the sun, when they wither to half their weight and develop a brownish red color. In some cases the flowers are collected before they drop, and in many places it is the practice to remove only the corollas, leaving the pistil to ripen to a fruit. A tree will yield 200 to 300 pounds of flowers in a year.

When fresh, the flowers are extremely sweet, with a peculiar pungent flavor and a characteristic color. When dry, the peculiar pungent flavor is less perceptible, particularly if the stamens are removed, and the flavor then resembles that of figs. The flowers are eaten either fresh or dried and cooked in many different ways with rice, shredded coconut, or flour.

The greater portion of the crop of flowers is used for the preparation by fermentation of *mowra spirit*.

The corollas are very useful for feeding cattle; they have extraordinary keeping qualities, as they dry well and are not attacked by weevils.

The composition of the flowers has been investigated at different times and the results vary considerably, particularly in respect of the quantity and nature of the sugar present. The total proportion of sugar recorded in the flowers of this tree varies from 40 to 70 per cent. The quantity of cane sugar recorded varies from 3 to 17 per cent, and that of invert sugar from 40 to 53 per cent, while one author has stated that the sugar is entirely invert sugar. Only a small quantity of protein is present, the maximum record being 7.25 per cent.

The nuts contain a solid fleshy kernel, which includes from 35 to 40 per cent of greenish grease, obtained by pressure. The oil cake possesses a bitter taste and can not be used for cattle feeding. The butter becomes rancid soon after manufacture and becomes a dirty yellow color. Its density at 15° C. is 0.972; it melts at from 43° to 44° C. and solidifies at 36°. It is very soluble in ether and partially so in alcohol. It saponifies easily with alkalis, and it constitutes a mixture of 80 per cent stearin and 20 per cent oleine, with crystals of stearic acid. This oil is used to adulterate clarified butter and for soap and candle making.

During the war interest was centered in the production of acetone from these flowers in India to supply the local demand in connection with the manufacture of munitions. The acetone was produced by the now well-known special fermentation process, and it has been alleged that the yield from the flowers of *Bassia latifolia* was one-tenth of their weight, or nearly ten times as much as is obtainable by distilling wood. The demand for acetone in India in peace times would not be large enough to justify the available supplies of flowers being entirely devoted to the manufacture of that product, but there remains the possibility of their being used for the manufacture of industrial alcohol. The yield of alcohol from the flowers is high compared with that from potatoes and other materials commonly used. It has been stated that about 90 gallons of 95 per cent alcohol is obtainable from 1 ton of dried flowers.

In view of the extended use that is now being made of alcohol for power purposes, it seems likely that the most profitable way of utilizing the flowers would be as a source of a mixed motor spirit of the natalite type, for local use in India. That motor spirit can be produced on a manufacturing scale in

India from *Bassia* flowers has already been demonstrated, and it is stated that running trials with the spirit proved satisfactory.

The tree is well adapted to withstand drought and is especially suited for planting on dry and waste lands where little else will grow. The tree takes about 20 years to produce flowers and seeds in large quantity, but during this period the land need not be entirely unproductive if interplanting were adopted at first. (Adapted from *Daily Commerce Reports*, No. 200, August 25, 1920, p. 952.)

51156 and 51157.

From Tiflis, Transcaucasia, Russia. Seeds presented by Charles K. Moser, American consul. Received August 25, 1920. Quoted notes by Mr. Moser.

51156. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

"The famous *duthma melon* from Armenian authorities at Erivan."

"A celebrated local variety of muskmelon said to be very fine." (F. N. Meyer.)

For previous introduction, see S. P. I. No. 27805.

51157. *MEDICAGO SATIVA* L. Fabaceæ. Alfalfa.

"*Lucern* from Armenian authorities at Erivan."

51158 to 51161.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Gustav Helmrich. Received August 25, 1920. Quoted notes by Mr. Helmrich.

51158. *AGROSTIS* sp. Poaceæ. Grass.

"*Cok-pechadya* (small grass)."

51159. *AXONOPUS* sp. Poaceæ. Grass.

"Native name not obtainable."

51160. *SPOROBOLUS INDICUS* (L.) R. Br. Poaceæ. Grass.

A grass with erect culms up to 1 meter tall, in large clumps with numerous leafy shoots at the base; the panicle is 15 to 30 centimeters long, with slender, ascending branches, the short-pediceled spikelets mostly borne along the lower side. It often forms an almost pure stand on open slopes, and is an important constituent of native pastures. Found on grassy hills and dry savannas from the Bahamas and Mexico to northern South America. (Adapted from *Contributions from the National Herbarium*, vol. 18, p. 369.)

For previous introduction, see S. P. I. No. 48479.

51161. *TRisetum DEYEUXIOIDES* (H. B. K.) Kunth. Poaceæ. Grass.

A fibrous-rooted grass with cespitose erect shining culms, glabrous nodes, and flat, linear, scabrous leaves. The branching panicle is whorled, often nodding, with lower branches spreading, upper appressed to the scabrous rachis. Native to the swamps along the bank of Lake Tezcuco, Mexico. (Adapted from *Bonpland and Humboldt, Nova Genera et Species Plantarum*, vol. 1, p. 147.)

51162 to 51179.

From Avondale, Auckland, New Zealand. Budwood presented by H. R. Wright, Avondale Nursery. Received August 31, 1920. Quoted notes by Mr. Wright.

51162 to 51179—Continued.

51162 and 51163. *AMYGDALUS PERSICA* L. Amygdalaceæ. **Peach.**
(*Prunus persica* Stokes.)

51162. "Dormant buds of *Allen's Late*."

51163. "Dormant buds of *Golden Queen* (improved)."

51164. *MALUS PUMILA* Mill. Malaceæ. **Paradise apple.**

"Blight-proof *Paradise* for use as a dwarfing stock; aphids resistant."

51165 to 51179. *MALUS SYLVESTRIS* Mill. Malaceæ. **Apple.**

51165. "Aerial, aphids resistant, used as a stock."

51166. "Alpha, aphids-resistant seedling from *Irish Peach*. The fruit is twice as large as the parent and much earlier. I consider it the earliest apple in existence. It is a gold mine to the fruit grower on account of its size, flavor, and extreme earliness; it is aphids proof and very productive. I predict a great demand for this apple as soon as I put it on the market, and when largely planted here, I think it will give the consignments of Canadian apples that arrive here in early summer a very nasty bump."

The parent, *Irish Peach*, is described in the Wright catalogue as "A medium-sized oblong fruit with clear yellow skin handsomely striped with bright red. The yellowish white flesh is tender and very juicy; the tree is a regular cropper and aphids proof."

51167. "Ballarat, a large cooking apple, and a great cropper; not aphids resistant, but well worth growing."

51168. "Bordeaux Reinette, a very fine dessert apple, and I believe aphids proof."

51169. "Coles Champion, a very late-keeping dessert apple; aphids resistant, and used as a stock."

51170. "Cowell's Red Streak, striped, midseason apple; aphids resistant, and used as a stock."

51171. "Frimley Beauty, a fair dessert apple and a good cooking apple, said to be *Rome Beauty* × *Jonathan* cross; not aphids resistant, but well worth growing."

51172. "Imm's Seedling, a large cooking apple; aphids resistant, and used as a stock."

51173. "Irish Peach seedling, for top-working *Pyrus prunifolia* as an intermediate stock for working any commercial variety that lacks affinity to *P. prunifolia* direct."

51174. "Lippiatt's, aphids resistant, used as stock."

51175. "Lord Nelson, a cooking apple of great size; a heavy cropper."

51176. "Mobb's, aphids resistant, used as a stock."

51177. "Mobb's Royal, a very large cooking apple; tree hardy and prolific."

51178. "Motion's, aphids resistant, used as a stock."

51179. "Ruby Gem, a beautiful apple of medium size, brilliant red all over; flesh snowy white, tender, crisp, juicy, mild, sub-acid, and delicious; strong grower and early bearer; blight proof; medium."

For previous introduction, see S. P. I. No. 6740.

51180 to 51182.

From Naples, Italy. Seeds presented by Willy Mueller, Hortus Partenopensis. Received September 14, 1920. Quoted notes by Mr. Mueller.

51180 and 51181. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.

Watermelon.

51180. "A white-seeded watermelon from Nocera; very good."

51181. "A black-seeded watermelon from Maddaloni, Province of Naples; extraordinarily good."

51182. LYCOPERSICON ESCULENTUM Mill. Solanaceæ.

Tomato.

"An extraordinarily large-fruited variety from Nocera."

51183. DACTYLIS ASCHERSONIANA Graebn. Poaceæ.

Grass.

From Dahlem, near Berlin, Germany. Seeds presented by Dr. A. Engler, director, Royal Botanic Garden and Museum. Received September 3, 1920.

A creeping perennial grass, native to Germany, with runners up to 4 inches in length and lax stems up to 2 feet in height. The bright-green, rough leaves are lax, mostly narrow, sharp ribbed, and over a foot long. The panicles are about 8 inches long and pendent. (Adapted from *Notizblatt des Königlichen Botanischen Gartens zu Berlin*, vol. 2, p. 274.)

For previous introduction, see S. P. I. No. 30232.

51184 to 51190.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received July 30, 1920. Quoted notes by Mr. Johnson.

51184. ARUNDINELLA DEPPEANA Nees. Poaceæ.

Grass.

"(No. 329.) Grass collected above Quebradas Secas, 3,000 feet."

An erect, tufted perennial with strong slender simple culms up to 2.5 meters tall, with flat blades, scabrous at least on the upper surface, and rather densely flowered oblong panicles, 20 to 40 centimeters long. Native to moist places in Mexico and Brazil; also to central and western Cuba. (Adapted from *Contributions from the National Herbarium*, vol. 18, p. 290.)

51185 and 51186. CHAETOCHLOA SULCATA (Aubl.) Hitchc. Poaceæ.

(*Setaria sulcata* Raddi.)

Grass.

51185. "(No. 327.) Grass collected at an altitude of 3,000 feet along the roadside above Quebradas Secas."

A perennial grass cultivated in greenhouses or in the open in the Tropics for ornamental purposes, chiefly on account of the broad plaited blades, 2 inches wide, that resemble those of young palms. The dense, narrow panicles are 1 to 2 feet long. (Adapted from *Hitchcock, Genera of Grasses of the West Indies*, p. 243.)

For previous introduction, see S. P. I. No. 48776.

51186. "(No. 322.) A grass 2 feet tall, with reddish purple heads; collected along the roadside near Samac."

51187. ISACHNE ARUNDINACEA (Swartz) Griseb. Poaceæ.

Grass.

"(No. 326.) A grass collected along the roadside above Quebradas Secas, at an altitude of 3,000 feet."

A grass which climbs among shrubs or small trees to a height of as much as 6 meters, with strong canes and elongated branches; the scabrous blades are commonly 20 centimeters long and 1.5 to 2 centimeters wide.

51184 to 51190—Continued.

The panicles are about 12 centimeters long, the long lower branches at first ascending, finally wide spreading; the spikelets are crowded toward the ends of the branches. Native to wooded hillsides in Jamaica at an altitude of 1,000 to 2,000 meters; also from Mexico to northern South America. (Adapted from *Contributions from the National Herbarium*, vol. 18, p. 343.)

For previous introduction, see S. P. I. No. 49447.

51188. *Panicum olivaceum* Hitchc. and Chase. Poaceæ. Grass.

“(No. 325.) Grass collected along the roadside above Quebradas Secas, at an altitude of 3,000 feet.”

A grass with olive-green vernal culms, erect, or somewhat spreading at the base, 20 to 40 centimeters high, velvety villous with short hairs, and with bearded nodes. The blades are rather stiffly erect or ascending or some of the lower spreading, 4 to 7 centimeters long, 5 to 8 millimeters wide (the uppermost erect, 1 to 3 centimeters long), puberulent on both surfaces. The autumnal form is bushy with the branches evenly distributed. Native to gravelly banks and cultivated fields from Mexico to Costa Rica and also in Venezuela. (Adapted from *Contributions from the National Herbarium*, vol. 15, p. 225.)

51189. *Paspalum conjugatum* Berg. Poaceæ. Grass.

“(No. 279.) *Sac pachadya* (white meadow grass) from Chama, 6 to 12 inches high, rooting at the nodes. Very abundant in all places.”

An extensively creeping perennial with compressed culms; the suberect flowering branches are sometimes 1 meter tall; the flat thin blades are up to 20 centimeters long and 8 millimeters wide; the spikelets bear long, scant, silky hairs around the margin. It is one of the commonest grasses of moist savannas and ditch banks, forming extensive and close mats. It is said by some to be an excellent forage grass. (Adapted from *Contributions from the National Herbarium*, vol. 18, p. 318.)

For previous introductions, see S. P. I. No. 38031.

51190. *Paspalum paniculatum* L. Poaceæ. Grass.

“(No. 277.) *Rash tzimaaj* (green bow) from Chama. This is a tall growing species reaching 2½ to 3 feet, with flower heads 7 feet long. It grows in clumps, stooling out in growing.”

For previous introduction see S. P. I. No. 49379.

51191 to 51193.

From Lamac, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamac Horticultural Station. Received August 2, 1920.

51191. *Capparis micracantha* DC. Capparidaceæ.

A large shrub or small tree with smooth bark, glabrous branches, and very small straight conic spines. The coriaceous, shining, broad-lanceolate leaves are 4 to 8 inches long, and the flowers, 2 to 4 in a series in vertical lines on the branches, are 1½ inches in diameter and have oblong petals 1 inch long. The smooth subglobose fruit is 2 to 3 inches long. (Adapted from *Hooker, Flora of British India*, vol. 1, p. 179.)

For previous introduction, see S. P. I. No. 43243.

51191 to 51193—Continued.

51192. *IPOMOEA NYMPHAEAEFOLIA* Blume. Convolvulaceæ.(*I. peltata* Choisy.)

Morning-glory.

"A white-flowered perennial species which should be of interest to your correspondents in Porto Rico, Cuba, and extreme southern Florida. The plant is of medium growth and blossoms during the winter months, the tourist season." (*Wester.*)

For previous introduction, see S. P. I. No. 47920.

51193. *TALINUM PATENS* (L.) Willd. Portulacaceæ.

"An upright-growing perennial herb from Java, with tender, succulent leaves absolutely free from fiber. The leaves are boiled and eaten with meat, fish, or eggs, like spinach or turnip greens, and make an excellent dish for the table.

"The seeds should be sown very shallow, where they are well protected from heavy rains, as the young plants are very delicate. As soon as the plants are 15 centimeters high they can be cut off a few centimeters above the ground, where they rapidly take root. Once the *Talinum* plants are through the seedling stage they grow very rapidly and are easily multiplied from cuttings 10 to 12 centimeters long, both from the tender tops and the mature stems. In the vegetable garden plants should be set out above 25 centimeters apart, in rows 30 to 35 centimeters apart." (*Wester.*)

51194. *BISCHOFIA TRIFOLIATA* (Roxb.) Hook. Euphorbiaceæ.(*B. javanica* Blume.)

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received August 5, 1920.

A deciduous tree native to the tropical slopes of the Himalayas. The red, rough, moderately hard wood is esteemed one of the best timbers in Assam, where it is used for bridges and other works of construction. It is sometimes called "red cedar." (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 1, p. 454.*)

For previous introduction, see S. P. I. No. 47835.

51195 to 51197.

From Chama, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received August 23, 1920. Quoted notes by Mr. Johnson.

51195. *ACHIMENES* sp. Gesneriaceæ.

"(No. 435.) A fine gesneriad with sky-blue flowers, borne in terminal racemes of 3 to 22 or more, about 1 inch in diameter and with a white and yellow throat. The plant produces small round scaly tubers and should make a good basket plant."

51196. *COIX LACRYMA-JOBI* L. Poaceæ.

Job's-tears.

"(No. 171.) *K-ohl*. The Indians prize the seeds for necklaces. *K-ohl* means necklace, in Kekchi."

For previous introduction, see S. P. I. No. 49516.

51197. *ISACHNE ARUNDINACEA* (Swartz) Griseb. Poaceæ.

Grass.

"(No. 434.) Grass."

A grass climbing among shrubs or small trees to a height of as much as 6 meters, with strong canes and elongate branches; the scabrous blades are commonly 20 centimeters long and 1.5 to 2 centimeters wide;

51195 to 51197—Continued.

the panicles are 12 centimeters long, the long lower branches at first ascending, finally wide spreading; the spikelets are crowded toward the ends of the branches. Native to wooded hillsides of Jamaica, and from Mexico to northern South America at altitudes of 1,000 to 2,000 feet. (Adapted from *Contributions from National Herbarium*, vol. 18, p. 343.)

For previous introduction, see S. P. I. No. 49447.

51198. PHASEOLUS VULGARIS L. Fabaceæ.**Common bean.**

From Santiago, Chile. Seeds presented by Salvador Izquierdo. Received August 27, 1920.

The Chilean bean, as this most interesting variety is called, is a climber with whitish flowers and pods which become purple at maturity; each pod contains 5 to 7 almost globular, chamois-colored seeds. The foliage is equally abundant at flowering and fruiting time. During rainy periods this plant matures with no signs of mold or rot. The seeds are sown May 10, and are harvested the latter part of September.

When green, this variety makes an excellent dish; the ripe seeds dried are especially good in meat stews and soups. The seed is very starchy; it cooks well without splitting, and the seed coat is much more digestible than that of the Soissons bean and similar varieties. (Adapted from *Bulletin de la Société Nationale d'Acclimatation de France*, vol. 65, p. 350.)

51199. AVENA SATIVA L. Poaceæ.**Oats.**

From Cadiz, Spain. Seeds presented by B. Harvey Carroll, American consul. Received August 27, 1920.

"The only cultivated variety of Spanish-grown oats on sale in the market of Cadiz; on account of its isolated position, Cadiz is not the best market for agricultural products, and no new varieties have been produced in recent years." (Carroll.)

51200. GARCINIA MANGOSTANA L. Clusiaceæ.**Mangosteen.**

From Peradeniya, Ceylon. Seeds presented by C. Driberg, secretary, Ceylon Agricultural Society. Received August 30, 1920.

"The mangosteen is renowned as one of the delicious fruits of the world and has been called the 'queen of tropical fruits.' The tree is strictly tropical and can be successfully grown only under the most favorable soil and climatic conditions." (R. A. Young.)

For previous introduction, see S. P. I. No. 49441.

51201. EUGENIA CURRANII C. B. Robinson. Myrtaceæ.

From Lamo, Bataan, Philippine Islands. Seeds presented by P. J. Wester, agricultural adviser, Lamo Horticultural Station. Received September 1, 1920.

A very attractive Philippine tree attaining a height of 9 meters or more, with gnarled trunk and tortuous branches and quadrangulate-winged young growth. The oblong-ovate, entire, leathery leaves are dark green and shining; the fruit is congregated 20 to 50 in clusters on the bare branches or between the leaves on the more mature twigs; the individual fruit is about the size of a grape with a thin, smooth, dark-red skin which changes to black at full maturity. The flesh is red near the skin, otherwise white, rather dry and crisp, and pro-

nouncedly acid with a pleasant flavor not unlike that of the crab apple. The relatively large seed which clings to the flesh is sometimes absent. The fruit is too acid for use as a dessert but would, in all probability, make an excellent jelly. The fruit is used in some localities for making preserves, wine, and pickles.

The tree is of vigorous growth, succeeds well where the wet and dry seasons are strongly accentuated, and requires well-drained land for the best results. In productiveness it is apparently exceeded by no other species in the genus, and it ripens principally from April to June. (Adapted from *Philippine Agricultural Review*, vol. 8, p. 105.)

For previous introduction, see S. P. I. No. 38375.

51202 and 51203.

From Seville, Spain. Seeds presented by Robert Harnden, American consul. Received September 3, 1920. Quoted notes by Mr. Harnden.

51202. *AVENA SATIVA* L. Poaceæ.

Oats.

"Gray oats, one of the only two kinds grown in Andalusia."

"Apparently similar to *Winter Turf* (Gray Winter)." (C. W. Warburton.)

51203. *AVENA STERILIS* L. Poaceæ.

Oats.

"Fair oats, one of the only two kinds grown in Andalusia."

51204. *PACHIRA FASTUOSA* (DC.) Decaisne. Bombacaceæ. (*P. macrocarpa* Walp.)

From Santiago de las Vegas, Cuba. Seedlings presented by Gonzalo M. Fortun, director, Agricultural Experiment Station. Received September 4, 1920.

Seedlings of a handsome tropical tree, native to Mexico. The flowers in their size and color are both exceptional and attractive, as they measure about a foot in diameter; the strap-shaped petals are white, and the large brushlike cluster of stamens crimson and yellow. The foliage is not unlike that of the horse-chestnut, but it is more leathery in texture. (Adapted from *Gardeners' Chronicle*, vol. 54, p. 325.)

51205. *PASSIFLORA MOLLISSIMA* (H. B. K.) Bailey. Passifloraceæ.

From Guayaquil, Ecuador. Seeds presented by James Birch Rorer, Asociación de Agricultores del Ecuador. Received September 9, 1920.

"Seeds of a fruit which is grown in the valleys of the Sierra and which is commonly called 'tacso.' The flavor of the fruit is somewhat like that of currants. A very delicious sherbet or ice cream can be made from it and also a fine drink or 'refresco.'" (Rorer.)

51206 and 51207.

From Buitenzorg, Java. Bulbs presented by Dr. P. J. S. Cramer, chief, Plant-Breeding Station. Received September 9, 1920.

51206. *AGAVE CANTALA* (Haw.) Roxb. Amaryllidaceæ.

A species long grown in the Philippine Islands for "maguey fiber," probably originally introduced from Mexico. The short, thick stem bears an aloelike cluster of large fleshy leaves and a tall flower stalk, on which grow a large number of small bulbils or "pole plants." The spiny-edged leaves are grouped compactly around the stem and terminate in a hard, sharp spine. The plant lives from 7 to 25 years and does

51206 and 51207—Continued.

not flower until it is 7 or 8 years old, hence the belief that it flowers only once every century and the popular name "century plant."

A long dry season and a light rainy one are essential for the best growth of this plant; while warm, clear, dry weather, with bright sunshine, is required to dry and bleach the fiber. The thick and pulpy leaves of the maguey render it capable of withstanding long droughts which would be disastrous to most other economic plants. The most essential step in maguey cultivation is the selection of a well-drained soil. Shallow, rocky, limestone soils and soils formed by the disintegration of coral rock are best suited for maguey growing.

The fiber is large, inflexible, slightly yellowish, and of a great tenacity. This latter quality renders it very valuable in all cases where sudden strains are anticipated, while its lack of elasticity prevents it from being used to advantage in power transmission. In the United States it is largely used for the manufacture of binder twine, fodder yarns, and various other cordage purposes. In the Philippine Islands carefully selected young leaves are cleaned by the same process used in cleaning pineapple leaves; the fiber thus obtained is very fine and silky and is used for making cloth, fine handkerchiefs, and other articles. (Adapted from *Philippine Agricultural Review*, vol. 3, p. 424.)

For previous introduction, see S. P. I. No. 33508.

51207. *CROTALARIA USARAMOENSIS* Baker f. Fabaceæ.

A tall herb, native to German East Africa and allied to *C. lanceolata* E. Mey. from which it differs in its broader and shorter leaflets, which are glabrous above and strigose pubescent below. The racemes are 15 to 25 centimeters long.

In Buitenzorg the grayish fiber is not so smooth and silky as that of *Hibiscus cannabinus*, but that does not necessarily mean that it is not suitable for the spinning of yarn. The same is the case with sunn hemp (*Crotalaria juncea*), which in British India is more highly esteemed than Deccan hemp (*Hibiscus cannabinus*). A great drawback is that the total quantity of fiber obtained up to the present differs very materially in strength and ordinarily is not very strong. How this will be influenced by different climatic and cultural conditions and soil can be determined only by making tests elsewhere, which is strongly recommended.

The practical utility of the fiber can be determined only by spinning and weaving tests. Adequate specimens are available for these tests, but unfortunately tests can not be carried out on account of the difficulty in exporting.

The leaves are used as a green manure and as cattle feed. Analyses made by Dr. A. W. K. de Jong, of the Agricultural Chemical Laboratory, give the following percentages for fresh and dry leaves, respectively: Albumin, 5.3 and 26.7; nitrogen, 0.87 and 4.27; fat, 1.4 and 7.0; starch 1.9 and 9.6; crude fiber, 4.0 and 20.1; crude ash, 0.9 and 4.5. The water content of the fresh leaves was 80.1 per cent and their nutritive value 34.4 per cent.

The roots and stems will perhaps be suitable for the manufacture of paper, where the transportation facilities are favorable. The wood which remains after the removal of the fiber is very thin and smooth, but burns well and without smoke and is much in demand by the inland

51206 and 51207—Continued.

women as firewood. It has no commercial value, but is very acceptable in regions where firewood is scarce.

The seed from an old planting is very plentiful; from a planting harvested solely for fiber there are perhaps enough seeds for a new planting. Whether from the seeds a profitable by-product can be made has not yet been demonstrated. Probably they are good chicken feed. An analysis of the seeds shows the following percentages: Water, 12.9; oil, 2.98; albumin, 23.5; nitrogen, 3.72.

In the neighborhood of a *Crotalaria* plantation bees multiply rapidly and produce very good honey. (Adapted from *Journal of the Linnean Society*, vol. 42, p. 346, and *Buitenzorg, Mededeelingen uit den Cultuur-tuin No. 12, 1918.*)

51208. PERSEA AMERICANA Mill. Lauraceæ.**Avocado.***(P. gratissima Gaertn. f.)*

From Orange, Calif. Seeds presented by C. P. Taft. Received September 11, 1920.

"Seedling avocados, first generation from plants grown from the Chilean seed you gave me. They resemble very closely the fruit of the original tree and are as hardy as any. I find that I have several trees of the type." (*Taft.*)

51209 to 51211.

From Haifa, Syria. Seeds collected by Amram Khazanoff, Jewish Colonization Association. Received September 14, 1920. Quoted notes by Mr. Khazanoff.

"These grains have recently been introduced into our colonies west of the Jordan and are giving good results there. Collected at Ayelette Hashahar (i. e., Morning Star), near the Waters of Merom, Syria."

51209. HORDEUM VULGARE COELESTE L. Poaceæ.**Barley.**

"*Nebawi* barley, glumeless, from the Mountain of Nebo in the Land of Moab, whence its name."

51210 and 51211. TRITICUM DURUM Desf. Poaceæ.**Durum wheat.**

51210. "*Mahmoodi* wheat, of Tunisian origin, best adapted for heavy moist soils."

51211. "*Reyati* wheat, from Lebanon, where it does very well."

51212 and 51213.

From Melbourne, Victoria. Seeds purchased from F. H. Brunning, Pty. Ltd. Received August 19, 1920.

51212. TRIFOLIUM SUBTERRANEUM L. Fabaceæ.**Clover.**

An annual clover, native to the Mediterranean countries, with prostrate stems up to a foot in length and long-petioled leaves. The fertile flowers are borne in clusters of two to seven, and the infertile flowers are very numerous. The petals are white, marked with pink. This clover is usually found in cultivated places, especially in sandy locations. (Adapted from *Ascherson und Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, p. 596.)

For previous introduction, see S. P. I. No. 38983.

51212 and 51213—Continued.

51213. *LOLIUM PERENNE* L. Poaceæ.

Wimmera rye-grass.

"A tufted short-lived perennial which makes a fair crop of hay and is especially valuable in pastures. It usually grows to a height of 1 to 2 feet, and produces an abundance of long, narrow leaves near the base of the plant. This has been a popular grass in England for at least three centuries and was early introduced into America.

"The chief uses to which this grass should be put are as an ingredient in pasture mixtures, as a temporary covering to prevent the washing of the soil, for lawns, and for winter grazing on Bermuda grass pastures in the South. It is valuable for these purposes because of its rapid germination and growth. It should have a fertile, moist soil with a cool, damp climate." (*Lyman Carrier.*)

For previous introduction, see S. P. I. No. 36099.

51214. *CHENOPODIUM ALBUM* L. Chenopodiaceæ.

From Calcutta, India. Seeds presented by H. G. Carter, director, Botanical Survey of India. Received July 3, 1920.

"The plant grows to the height of 6 feet, and the seeds ripen in October. When young the leaves and tender branches are gathered as a potherb, much resembling spinach, and are regarded as very wholesome; but the plant is chiefly valued for its seeds, which are used as a cereal. The seed is said to be superior to buckwheat and rich in certain salts. The hill tribes of certain parts of the western Himalayas cultivate *Chenopodium* as one of the principal crops." (*Carter.*)

51215. *CITRUS SINENSIS* (L.) Osbeck. Rutaceæ.

Orange.

From Jerusalem, Palestine. Budwood presented by J. Ettinger, director, Agriculture and Colonization Department, Zionist Commission. Received August 2, 1920.

"Bud sticks of the Jaffa orange, *Shamooti.*" (*Ettinger.*)

The Jaffa orange is one of the largest, larger even than the Washington Navel. Its form is obovate, its skin very thick, and its fruit seedless. The tree is not spiny, and the fruit, therefore, is never scarred by thorns. Its shipping qualities are excellent.

The Jaffa oranges seen in Tunis and Algeria and those grown in America and illustrated in American publications have very little resemblance to the real Jaffa orange. They are represented as having seeds, while the true Jaffa orange is seedless. (Adapted from *Aaronsohn, Agricultural and Botanical Explorations in Palestine*, p. 26.)

For previous introduction, see S. P. I. No. 37461.

51216 to 51248.

From Kenia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received July 30, 1920. Quoted notes by Doctor Shantz.

51216. *ABUTILON* sp. Malvaceæ.

"(No. 974. Voi, Seyidie Province, Kenia. April 19, 1920.) A very attractive yellow-flowered mallow; flowers 1 inch in diameter."

51216 to 51248—Continued.

51217. *ANNONA CHERIMOLA* Mill. Annonaceæ. Cherimoya.

"(No. 958. Moshi, Tanganyika Territory. April 15, 1920.) An anona with a large heart-shaped fruit 8 inches long, not unlike the soursop, and of excellent flavor."

51218. *CALOPHYLLUM INOPHYLLUM* L. Clusiaceæ.

"(No. 950. Zanzibar, Zanzibar. April 7, 1920.) A large tree, with a leaf like that of a magnolia or *Ficus*, and bearing a fruit about 1 inch in diameter, the pulp of which is often eaten by natives."

51219. *CASSIA LAEVIGATA* Willd. Cæsalpiniaceæ.

"(No. 975. Embu, Kenia Province, Kenia. May 3, 1920. Herb. No. 800.) A small cassia extensively used as a hedge and ornamental in this section. It appears everywhere and behaves as a wild plant. It is exceptionally useful, and will stand a cool climate but may not withstand frost. The climate here is very cool, but frost does not occur. Try it out in Florida and California, but if it will stand frost, it will do well over a much wider range."

51220. *CASSIA OCCIDENTALIS* L. Cæsalpiniaceæ.

"(No. 973. Voi, Seyidie Province, Kenia. April 19, 1920.) A yellow legume, similar in habit to *Glycyrrhiza*."

For previous introduction, see S. P. I. No. 42830.

51221. *CUCUMIS* sp. Cucurbitaceæ. Cucumber.

"(No. 971. Voi, Seyidie Province, Kenia. April 19, 1920.) A warty cucumber, 2 to 2½ inches long, which when ripe is eaten by animals."

51222. *CUCUMIS ANGURIA* L. Cucurbitaceæ. Cucumber.

"(No. 960. Moshi, Tanganyika Territory. April 15, 1920.) A rough-fruited cucumber, probably not used as food."

For previous introduction, see S. P. I. No. 46893.

51223. *CYPHOMANDRA BETACEA* (Cav.) Sendt. Solanaceæ. Tree-tomato.

"(No. 970. Moshi, Tanganyika Territory. April 17, 1920.) Brazilian tree-tomato."

For previous introduction, see S. P. I. No. 44913.

51224. *DIOSCOREA* sp. Dioscoreaceæ. Yam.

"(No. 965. Moshi, Tanganyika Territory. April 16, 1920.) Growing in a native garden. I have noticed only one of these plants. A very luxuriant growth with aerial tubers very numerous."

51225. *GLADIOLUS* sp. Iridaceæ. Gladiolus.

"(No. 964. Moshi, Tanganyika Territory. April 16, 1920. Herb. No. 795.) A plant with irislike leaves and very attractive white flowers."

51226. *HETEROPOGON CONTORTUS* (L.) Beauv. Poaceæ. Grass.

"(No. 982. Nairobi, Ukamba Province, Kenia. May 15, 1920.) The dominant grass of the Ati Plains, an excellent forage grass which produces seed readily and is perennial. Its habit is somewhat like that of *Andropogon scoparius* in the eastern portion of its range. This is one of the most important African grasses and should be given a thorough test in the highlands of California, Arizona, and New Mexico and in the pinelands of the South, especially in Florida."

For previous introduction, see S. P. I. No. 15357.

51216 to 51248—Continued.

51227. *HIBISCUS* sp. Malvaceæ.

"(No. 983. Nairobi, Ukamba Province, Kenia. May 25, 1920.) A very attractive flower about three-fourths of an inch in diameter."

51228. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum.

(*Sorghum vulgare* Pers.)

"(No. 952. About 50 miles above Tanga, Tanganyika Territory. April 7, 1920.) An especially interesting form, differing in habit from all others seen here."

51229. *HORDEUM VULGARE COELESTE* L. Poaceæ.

Naked barley.

"(No. 963. Moshi, Tanganyika Territory. April 16, 1920.) Hull-less barley, said to grow much better than wheat; a local crop. Small grains suffer from rust chiefly and a rust-resistant variety is essential."

51230. *LUFFA ACUTANGULA* (L.) Roxb. Cucurbitaceæ. Loofah gourd.

"(No. 967. Moshi, Tanganyika Territory. April 17, 1920.) A very large long type with outstanding ribs on the fruit. Seems distinct from other types seen here."

For previous introduction, see S. P. I. No. 42069.

51231. *MUSA ENSETE* Gmel. Musaceæ.

"(No. 976. En route from Embu to Meru, Kenia Province, Kenia. May 3, 1920.) A beautiful ornamental which grows along mountain streams; not eaten by natives here, although the large starchy seeds are occasionally seen in bead strings and as charms. The leaves are long, upright, and beautifully colored; they are used as skirts by the Kukuyu women, and also to tie up bundles. There are about a dozen seeds in each banana, and the natives say, 'Banana fruit poison.' The plant should grow wherever frost does not occur too frequently."

For previous introduction, see S. P. I. No. 35236.

51232. *NICOTIANA TABACUM* L. Solanaceæ.

Tobacco.

"(No. 966. Moshi, Tanganyika Territory. April 16, 1920.) The type grown by the natives and sold in powdered form, a small banana-leaf package to each person. The women usually sell the tobacco in the markets."

51233. *ORYZA SATIVA* L. Poaceæ.

Rice.

"(No. 954. Moshi, Tanganyika Territory. April 12, 1920.) Grown as a dry-land crop on dark, rich soil previously supporting a splendid high forest. Only a few heads are ripe at this time."

51234. *GLORIOSA SIMPLEX* L. Melanthaceæ.

"(No. 984. En route from Embu to Muzambi, Kenia Province, Kenia Colony. May 20, 1920.)" A showy plant somewhat similar to *Gloriosa superba* and producing a profusion of flowers with stalked reflexed spreading segments 2 inches long, yellow at the base, red on the outside, and recurved at the points. The flowers are one-third smaller than those of the common *Gloriosa*, and the segments are nearly oval, entire, acuminate, and scarcely undulated except toward the point. The leaves resemble those of the common *Gloriosa* and are in like manner terminated by a tendril. (Adapted from Curtis's *Botanical Magazine*, pl. 5239; and *Gardening Illustrated*, vol. 26, p. 556.)

51216 to 51248—Continued.

51235. *PTEROCARPUS INDICUS* Willd. Fabaceæ.

"(No. 951. Zanzibar, Zanzibar. April 7, 1920.) A tree with a seed similar to that of *Burkea*. Useful as an ornamental."

51236 to 51238. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

51236. "(No. 972. Voi, Seyidie Province, Kenia. April 19, 1920.) Castor-bean."

51237. "(No. 977. En route from Meru to Embu, Kenia Province, Kenia. May 3, 1920.) A large-seeded reddish type, which grows into treelike plants in the high, cool, mountainous country. This crop is used chiefly for external decoration; the oil is extracted by boiling, mixed with red clay, and this worked into the hair and smeared over the body of both men and women."

51238. "(No. 978. En route from Meru to Embu, Kenia Province, Kenia. May 3, 1920.) Large, and similar to No. 977 [S. P. I. No. 51237], but lighter in color."

51239. *COLEUS BARBATUS* (Andrews) Benth. Menthaceæ.

"(No. 979. En route from Thika to Embu, Kenia Province, Kenia. May 8, 1920.) A salvia or mint, forming a beautiful blue shrub or half shrub. It has a rather fleshy base and is probably propagated by cuttings, but it grows wild everywhere in this section. It forms a beautiful hedge, a mass of sky-blue flowers above the foliage. The natives have made hedges of it in many places."

51240. *THUNBERGIA GIBSONI* S. Moore. Acanthaceæ.

"(No. 981. Nairobi, Ukamba Province, Kenia. May 15, 1920. Herb. No. 828.) A very attractive low-growing vine with profuse orange-colored trumpet flowers. Very abundant in high forest regions of British East Africa."

51241 and 51242. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

51241. "(No. 961. Moshi, Tanganyika Territory April 16, 1920.) Wheat grown on the slopes of Mount Kilimanjaro."

51242. "(No. 962. Moshi, Tanganyika Territory. April 16, 1920.) Wheat grown on the slopes of Mount Kilimanjaro."

51243. *VIGNA* sp. Fabaceæ.

"(No. 956. Moshi, Tanganyika Territory. April 15, 1920. Herb. No. 793.) A small wild pea with a long and slender pod. The vine grows over low bushes."

51244. *ZEA MAYS* L. Poaceæ. Corn.

"(No. 953. Moshi, Tanganyika Territory. April 12, 1920.) Corn collected in a native field. Corn is a crop of first importance here. All stages of development were seen, planting and harvesting at the same time."

51245. (Undetermined.)

"(No. 955. Moshi, Tanganyika Territory. April 15, 1920. Herb. No. 794.) A small bean said by the natives to be good food. Only 2 seeds in each pod. The plant is abundant in the brush or second-growth areas about Moshi."

51216 to 51248—Continued.

51246. (Undetermined.)

“(No. 968. Moshi, Tanganyika Territory. April 17, 1920.) A small cucumber, reddish yellow when ripe, 1 inch in diameter and 2 to 2½ inches long. This fruit has a very strong taste, but others which look like this are very good to eat.”

51247. (Undetermined.)

“(No. 969. Moshi, Tanganyika Territory. April 17, 1920.) Similar to No. 968 [S. P. I. No. 51246] but with pale markings.”

51248. (Undetermined.)

“(No. 980. Nairobi, Ukamba Province, Kenia. May 15, 1920. Herb. No. 839.) A very beautiful low, well-rounded, mound-shaped shrub with nearly white bell-shaped flowers in graceful clusters, which should prove an attractive ornamental. It looks like one of the mallow fiber plants; its bast fiber is very good.”

51249 to 51251.

From Pernambuco, Brazil. Seeds presented by Hugh Matheson, through I. P. Roosa, New York. Received September 14, 1920. Quoted notes by Mr. Matheson.

51249. *ANACARDIUM OCCIDENTALE* L. Anacardiaceæ.

Cashew.

“*Caju*. A West Indian tree, 30 to 40 feet in height, with large leathery leaves and small kidney-shaped nuts borne on swollen pea-shaped stalks 2 to 4 inches long. Its juicy, acidulous stalk is used in preserves and the edible seed is roasted and served as a dessert.”

For previous introduction, see S. P. I. No. 45095.

51250. *CARICA* sp. Papayaceæ.

Papaya.

“*Mamão Caranus*.”

51251. (Undetermined.)

“*Mangabas*.”

51252. *FICUS* sp. Moraceæ.

Fig.

From Pernambuco, Brazil. Plants presented by Hugh Matheson, through I. P. Roosa, New York, N. Y. Received September 24, 1920.

A Brazilian tree of possible value as a shade or avenue tree in southern Florida.

51253. *MEZONEURUM SCORTECHINII* F. Muell. Cæsalpiniaceæ.

From Burringbar, New South Wales, Australia. Seeds presented by B. Harrison. Received September 16, 1920.

“A vine or trailing shrub called *barisber*, which would make a first-class hedge if trained on a wire fence. It is a strong, thick, prickly vine with splendid fern-like foliage and large racemes of bright-yellow flowers.” (*Harrison*.)

51254. *OLNEYA TESOTA* A. Gray. Fabaceæ.

From Coachella, Calif. Seeds presented by William R. Faries. Received September 14, 1920.

A handsome flowering tree, with wood that is dark, heavy, and hard, like ebony, and with nutritious foliage and flowers that are eaten with avidity by animals. The tree bears heavy crops of pods not unlike those of garden beans, and each pod may have several seeds of the size, appearance, and texture of

small peanuts and having the same agreeable flavor when roasted. The fleshy young pods probably could be cooked and eaten like green beans, since they do not taste bitter, even in the raw state. The largest pods have nine fully developed and two abortive beans.

The *Olneya* is the largest as well as the most attractive native tree in the driest deserts of the Southwest, away from the stream beds and with full exposure to heat and drought. The large taproot remains entirely unbranched for 7 or 8 feet. Such a habit of growth would indicate little or no interference with surface crops and would suggest the value of the tree for planting in or near cultivated lands where it may serve very well for hedges or windbreaks, as well as for holding terraces or as barriers against erosion. Even on desert lands that are too broken for irrigation it might prove worth while to plant belts of *Olneya* across the washes, to hold back and spread the flood waters. More moisture would be absorbed by the soil, and more vegetation could grow in addition to the forage that the *Olneya* itself would afford. (Adapted from O. F. Cook, *Journal of Heredity*, vol. 10, p. 321.)

For previous introduction, see S. P. I. No. 4537.

51255 and 51256.

From Alexandria, Egypt. Seeds presented by Prof. S. C. Mason, arboriculturist, United States Department of Agriculture. Received September 21, 1920.

51255. *ALLIUM CEPA* L. Liliaceæ. Onion.

A variety cultivated near Alexandria that may be useful for breeding work.

51256. *CUCUMIS MELO* L. Cucurbitaceæ. Muskmelon.

"*Aggur muskmelon.*" (*Mason.*)

51257. *DIGITARIA IBURUA* Stapf. Poaceæ. Grass.

From Kaduna, Nigeria. Seeds presented by P. H. Lamb, director of Agriculture, Northern Provinces. Received August 24, 1920.

"*Iburu* is grown by the natives of Northern Nigeria as a cereal. The grains separate fairly readily from the husks when pressure is applied, and the seeds are pure white. They weigh in their husks on the average 0.7 mgr., so that over 40,000 go to one ounce. As one raceme may contain as many as 200 spikelets, a single head may yield between 1,000 and 2,000 grains." (*Kew Bulletin of Miscellaneous Information*, No. 8, 1915, p. 381.)

"Introduced for testing as a forage crop." (*Piper.*)

51258 to 51265.

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received September 15, 1920. Quoted notes by Mr. Johnson.

51258. *DESMONCUS* sp. Phœnicaceæ. Palm.

"(No. 585.) A very spiny ornamental vine climbing, by hooks at the tip of the rachis, to the tops of forest trees."

51259. *PANICUM MILLEGRANA* Poir. Poaceæ. Grass.

"(No. 438.) From Chipok, Coban. A creeping grass, rooting at the nodes, growing luxuriantly on clay banks."

51260. *PANICUM FASCICULATUM* Swartz. Poaceæ. Grass.

"(No. 496.) Grass from Chama. More or less stooling in habit: leaves rather sparse."

51258 to 51265—Continued.

51261. *PASPALUM DENTICULATUM* Trin. Poaceæ.

Grass.

"(No. 439.) A coarse, tall, cattaillike grass, 4 to 5 feet tall, always found growing in wet places. From Chipok, Coban."

51262. *PASPALUM NOTATUM* Fluegge. Poaceæ.

Grass.

"(No. 441.) A grass, 6 to 12 inches tall, which forms a close mat. Grows in potiero, where it does well. From Chipok, Coban."

51263. *PASPALUM PLICATULUM* Michx. Poaceæ.

Grass.

"(No. 440.) A grass, 2 to 4 feet tall, from Chipok, Coban. Seeds taken from a haystack of which this grass formed a large part."

51264. *PIPER* sp. Piperaceæ.

"*Cordoncilla*."

For previous introduction, see S. P. I. No. 51059.

51265. *SOLANUM* sp. Solanaceæ.

"(No. 586.) *Macui*, in Kekchi dialect. Similar in habit and appearance to *Solanum douglasii* of California, but more shrubby. The tender young tips, picked and sorted and the tougher stems discarded, are widely used throughout this region as greens. During the hot summer season vegetables become scarce, but the *macui* is always to be had. The *macui* greens have an excellent flavor, are said to have medicinal properties, and seem to have more body than others. They are sometimes fried with eggs stirred in."

51266 and 51267. *MYRCIARIA CAULIFLORA* (Mart.) Berg. Myrtaceæ. Jaboticaba.

From Deodoro, Federal District, Brazil. Seeds presented by Dr. Aristides Caire, Campo Experimental. Received September 21, 1920.

51266. "A remarkably interesting tree with a compact symmetrical head of small bright-green leaves. The jaboticaba grows wild in southeastern Brazil, and is also cultivated to a greater extent than almost any other native fruit. The delicious fruits, abundantly produced directly upon the bark of the tree, are round, half an inch to 1½ inches in diameter, with thick, glossy, maroon-purple skin and translucent juicy white or rose-tinged pulp, of a most agreeable, vinous flavor. The oval compressed seeds, one to four to a fruit, are about half an inch long. The tree comes into bearing when 6 to 8 years old, and withstands little frost." (*P. H. Dorsett*.)

For previous introduction, see S. P. I. No. 45750.

51267. "*Jaboticaba murta mineira*. This variety is very good, with a fine skin, and very succulent. It is mostly cultivated in Rio de Janeiro, Minas Geraes, and Sao Paulo." (*Caire*.)

51268. *HIBISCUS SABDARIFFA* L. Malvaceæ. Roselle.

From Formosa, Argentina. Seeds presented by A. Wetmore, Biological Survey, United States Department of Agriculture. Received September 15, 1920.

An Old World tropical annual, 5 to 7 feet high, with almost sessile yellow flowers, each with a red eye, which open only one day. In three weeks the fleshy reddish calyxes are ready for the making of an unexcelled jelly. Each plant averages a yield of 2 pounds of calyxes.

Roselle sauce makes an excellent substitute for cranberry sauce. Analysis (by the Food Laboratory of the Bureau of Chemistry) of the calyx of roselle and the fruit of the cranberry show striking resemblances between them, the respective percentages being as follows: Water, 88.91 and 88.53; solids, 11.09 and 11.47; ash, 0.89 and 0.25; marc (insoluble matter), 6.67 and 4.60; acid (as malic), 2.77 and 2.74; reducing sugar (as invert), 0.33 and 1.90; sucrose, 0.03 and 0.10. Benzoic acid is absent in the roselle calyx and present in the cranberry fruit. Starch is absent in the roselle calyx.

Weight of fruit of roselle, 6.11 grams; cranberry, 0.94 grams. Percentage of edible portion: Roselle, consisting of calyx minus portion of its base which is cut away in removing the seed pods, 50.22; cranberry, 100.

The young roselle stems also make good jelly, and for such use the plants can be grown almost anywhere in the North or South. Roselle is grown in India for its fiber, which is used in the manufacture of cordage and coarser textile products, and could be cultivated for this purpose in the southern United States. For fiber the crop is cut while in flower, dried, made into bundles, and soaked in water for 15 or 20 days. It is then possible to wash out a strong silky fiber known as roselle hemp, considered by some to be the equal of jute. The leaves are sometimes used as a salad, and the seeds are supposed to have medicinal properties. They are also fed to cattle and poultry. (Adapted from *United States Department of Agriculture, Farmers' Bulletin 307.*)

For previous introduction, see S. P. I. No. 47119.

51269 to 51279. *PHLEUM PRATENSE* L. Poaceæ. Timothy.

From Copenhagen, Denmark. Seeds presented by Axel Lange, curator, Botanic Garden. Received September 24, 1920. Quoted notes by Mr. Lange.

Introduced for experimental work by the Office of Forage-Crop Investigations.

51269. "Native, from Lystrup Skov."

51270. "Locally grown, from Dansk Kvarter."

51271. "Locally grown, from Stranghojgaard."

51272. "Native, from Lystrup Skov."

51273. "Locally grown, from Koge."

51274. "Native, from Mose s. p., for Lystrup Skov."

51275. "Locally grown, from Biologisk Kvarter."

51276. "Locally grown, from Undervisningskvarter."

51277. "Locally grown, from Farum."

51278. "Locally grown from Farum Bregnersd."

51279. "Locally grown, from Amazir."

51280. *SOLANUM HAEMATOCLODUM* Dunal. Solanaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received September 20, 1920.

"An ornamental shrub with rather beautiful grayish blue flowers and blood-red fruits, growing dense and to a height of about 2 meters; it is quite hardy here. Native to Bolivia." (*Proschowsky.*)

51281. *CANAVALI* sp. Fabaceæ.

From Bahia, Brazil. Seeds presented by Dr. V. A. Argollo Ferrão. Received September 21, 1920.

"A wild bean that grows in the coconut plantations along the seacoast. The beans are found where the sands are fertile and receive subterranean irriga-

tion from the fresh-water lagoons whose water must run to the sea, by filtering beneath the sandy coast soil. These beans have very persistent vegetative parts and may be good pasture. On the place where I found these seeds mules and donkeys were feeding. The plant may be very useful for pasture and green manure for salt lands, for it grows quite close to the seaside." (*Argollo Ferrão.*)

51282 and 51283.

From Blackwood, South Australia. Seeds presented by E. Ashby. Received September 21, 1920. Quoted notes by Mr. Ashby.

"Seeds of these species were collected on Kangaroo Island in 1909 and grown in the wild part of my place, 'Wittunga,' where they have done well amongst the other scrub, absolutely without water or any attention; and this last season we had about the worst season we have ever known. The later spring rains were entirely absent, and the winter rains did not start until June."

51282. *CALLITRIS CUPRESSIFORMIS* Vent. Pinaceæ.

"A plant with handsome cones, very upright growth, and somewhat dingy green foliage commonly characteristic of the genus."

For previous introduction, see S. P. I. No. 47151.

51283. *CALLITRIS DRUMMONDII* (Parl.) Benth. Pinaceæ.

"This plant is undoubtedly a real acquisition as a dwarf, globose, bright-green, ornamental, cypresslike tree."

51284. *TRICHILIA EMETICA* Vahl. Meliaceæ.

From Lourenco Marques, Portuguese East Africa. Seeds presented by John A. Ray, American consul. Received September 23, 1920.

"Known in Portuguese East Africa under the native names *umkuhlu*, *marba*, *marwa-maawa*, *gnande*, *mafouriera*, *mafura*, or *mafurrera*, where they have long been known as the source of *mafura* tallow, a vegetable fat used by the natives for greasing the skin. The fat consists of about 55 per cent oleic acid and 45 per cent palmitic acid, and has been used in the manufacture of soap." (*W. W. Stockberger.*)

For previous introduction, see S. P. I. No. 21965.

51285. *ALLIUM SATIVUM* L. Liliaceæ.

Garlic.

From Seoul, Chosen. Sets presented by Dr. S. Hashimoto, director, Agricultural and Industrial Station of the Government General of Chosen, Suigen, Chosen, through Ransford S. Miller, consul general, Seoul. Received September 30, 1920.

"Sets of the best commercial varieties of garlic." (*Miller.*)

51286. *PENNISETUM PURPUREUM* Schumach. Poaceæ. Grass.

From Wynberg, Cape Colony. Seeds presented by J. B. Taylor. Received September 17, 1920.

"A good fodder grass from the Mazoe Valley in Rhodesia; it grows in clumps like Napier fodder. It is a sweeter, more succulent, and softer grass than Napier. Mr. Holland, of Port Elizabeth, is a breeder of pedigreed shorthorns, and has a large dairy; he has experimented with *fufu* grass and is loud in praise of it." (*Taylor.*)

51287 to 51297. ZEA MAYS L. Poaceæ.**Corn.**

From Maison Carree, Algeria. Seeds presented by Prof. L. Ducellier, Laboratoire d'Agriculture, Ecole d'Agriculture Algerienne. Received September 28, 1920.

"Maize cultivated at the School of Agriculture. The seeds I am sending were obtained from a single plant. This hybrid corn did better during the exceptionally dry season of 1920 than Navajo maize." (Ducellier.)

51287. No. 1. Small flattish red grains.

51288. No. 2. Small, rounded, red grains.

51289. No. 3. Ear with equal number of yellow and grayish, small, flat to roundish grains.

51290. No. 4. Small, flattish, orange-colored grains.

51291. No. 5. Small, flat, yellowish orange grains.

51292. No. 6. Ear with three-fourths of its grains yellow, one-fourth grayish violet; grains small, flat to roundish.

51293. No. 7. Small, flat to roundish, yellow grains.

51294. No. 8. Small, flat to roundish, very pale-yellow grains.

51295. No. 9. Very small, thick, whitish grains.

51295. No. 9. Very small, thick, whitish grains.

51297. No. 11. Small, rounded, dark-red grains.

51298 to 51305. AVENA SATIVA L. Poaceæ.**Oats.**

From Madrid, Spain. Seeds presented by the director, Escuela Especial de Ingenieros Agrónomos, through Ely E. Palmer, American consul. Received September 28, 1920.

"These are of the type of our *Winter Turf* or *Virginia Gray* oats." (C. W. Warburton.)

51298. *Avila*.

51302. *Segovia*.

51299. *Ciudad Real*.

51303. *Toledo*.

51300. *Guadalajara*.

51304. *Toledo*.

51301. *Madrid*.

51305. *Valladolid*.

51306 to 51333.

From Kisantu, Belgian Kongo. Seeds presented by Father Hyacinth Vanderyst. Received July 29, 1920.

Numbered for convenience in testing by the Office of Forage-Crop Investigations.

51306 to 51308. *CHLORIS* spp. Poaceæ.

Grass.

51306. *CHLORIS* sp.

51308. *CHLORIS* sp.

51307. *CHLORIS* sp.

51309. *CYMBOPOGON* sp. Poaceæ.

Grass.

51310. *CYPERUS* sp. Cyperaceæ.

Sedge.

51311. *CHLORIS* *RADIATA* (L.) Swartz. Poaceæ.

Grass.

51312. *ELEUSINE* *CORACANA* (L.) Gaertn. Poaceæ.

Ragi millet.

This is the well-known millet of the tropical regions of the Old World, where it forms a large part of the diet of many of the natives of India and tropical Africa.

For previous introduction, see S. P. I. No. 48456.

51313. *ERAGROSTIS* sp. Poaceæ.

51314. *INDIGOFERA* sp. Fabaceæ.

51306 to 51333—Continued.**51315. MELINIS MINUTIFLORA** Beauv. Poaceæ.

Grass.

A Brazilian grass which forms a dense carpet 3 or 4 feet thick; the blades of this grass are covered with a kind of wax, which is said to be sufficient to polish one's boots when walking through a thick growth of it. It is unusually palatable to cattle and horses. (Adapted from *note under S. P. I. No. 41148*, which see for previous introduction.)

51316. PANICUM sp. Poaceæ.

Grass.

51317. PASPALUM SCROBICULATUM L. Poaceæ.

Koda millet.

An erect annual grass, averaging 2 feet in height, native to India, where it is also extensively cultivated for the edible grain. The grain is poisonous, however, unless kept for a number of years. Cattle are fond of the grass before it ripens; when it is ripening it is poisonous to stock. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 111.)

For previous introduction, see S. P. I. No. 35332.

51318 to 51323. SPOROBOLUS spp. Poaceæ.

Grass.

51318. SPOROBOLUS sp.**51321. SPOROBOLUS** sp.**51319. SPOROBOLUS** sp.**51322. SPOROBOLUS** sp.**51320. SPOROBOLUS** sp.**51323. SPOROBOLUS** sp.**51324 to 51331. SYNTHESISMA** spp. Poaceæ.

Grass.

51324. SYNTHESISMA sp.**51328. SYNTHESISMA** sp.**51325. SYNTHESISMA** sp.**51329. SYNTHESISMA** sp.**51326. SYNTHESISMA** sp.**51330. SYNTHESISMA** sp.**51327. SYNTHESISMA** sp.**51331. SYNTHESISMA** sp.**51332 and 51333. TRISTACHYA** spp. Poaceæ.

Grass.

51332. TRISTACHYA sp.**51333. TRISTACHYA** sp.**51334 to 51343.**

From Kenia, British East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September, 1920.

A collection of grasses from British East Africa.

51334. ANDROPOGON TRICHOPUS Stapf. Poaceæ.

Grass.

"(No. 1093. Fort Hall, Kenia Province. June 17, 1920.) A tall grass abundant along roadways."

51335. CAPRIOLA DACTYLON (L.) Kuntze. Poaceæ.

Grass.

"(No. 1060. En route from Meru to Embu, Kenia Province. June 16, 1920.) A grass which forms large mats in the roadway in this mountain country."

For previous introduction, see S. P. I. No. 44098.

51336. CHAETOCHLOA AUREA (Hochst.) Hitchc. Poaceæ.

Grass.

"(No. 1077. Embu, Kenia Province. June 17, 1920.) A tall grass, abundant but never dominant over large areas."

For previous introduction, see S. P. I. No. 38773.

51334 to 51343—Continued.

51337 and 51338. *CHAETOCHELOA SULCATA* (Aubl.) Hitchc. Poaceæ.

Grass.

51337. "(No. 1063. Chuka, Kenia Province. June 16, 1920.) A very large grass with broad leaves and many ribs."

For previous introduction, see S. P. I. 38776.

51338. "(No. 1068. Chuka, Kenia Province. June 16, 1920.) A grass with rather large leaves; grown in clumps."

51339. *CHLORIS RADIATA* (L.) Swartz. Poaceæ.

Grass.

"(No. 1076. Embu, Kenia Province. June 17, 1920.) A very fine grass with small stipalike seeds."

For previous introduction, see S. P. I. No. 51311.

51340. *CYMBOPOGON CYMBARIUS* (L.) Rendle. Poaceæ.

Grass.

"(No. 1061. En route from Meru to Embu, Kenia Province. June 16, 1920.) A coarse grass, not dominant anywhere, but relatively common in the mountain country."

51341. *ECHINOCHLOA CRUSGALLI EDULIS* Hitchc. Poaceæ.

Grass.

"(No. 1053. Meru, Kenia Province. June 16, 1920.) A tall grass growing along waterways. It produces excellent growth on wet lands."

For previous introduction, see S. P. I. No. 49693.

51342. *MELINIS MINUTIFLORA* Beauv. Poaceæ.

Grass.

"(No. 1055. En route from Meru to Embu, Kenia Province. June 15, 1920.) A purple-topped grass occurring only in the hill country, where it forms small colonies to the exclusion of other plants."

For previous introduction, see S. P. I. No. 51315.

51343. *PANICUM* sp. Poaceæ.

Grass.

"(No. 1066. Chuka, Kenia Province. June 16, 1920.) A delicate form growing in the bush and open forest region."

51344. *ANIGOZANTHOS MANGLESII* D. Don. Amaryllidaceæ.

From Perth, Western Australia. Seeds presented by H. C. Trethowan, Undersecretary for Agriculture. Received September 21, 1920.

An amaryllidaceous plant native to the Swan River country of southwestern Australia. It bears scorpioid racemes on stout, woolly, bright-red stems. The lustrous green, tomentose spathes are square at the end, recurved, and bear the stamens on the curve. (Adapted from the *Pacific Garden*, vol. 7, p. 11.)

51345 and 51346.

From Aguascalientes, Aguascalientes, Mexico. Presented by Luther K. Zabriskie, American consul. Received September 25, 1920.

51345. *DAHLIA* sp. Asteraceæ.

Dahlia.

Dahlia roots included in the shipment of tubers of *hierba de chicle*.51346. *EUPHORBIA* sp. Euphorbiaceæ.Tubers of the *hierba de chicle*.

"These were brought to my attention by Redick R. Moore, an American mining engineer, who interested himself in the plant after noting the fact that the skin or husk of the tuber was commonly employed by the natives as chewing gum, and that the same resolved itself into an India-rubberlike substance after being chewed. The plant grows in

51345 and 51346—Continued.

crevices between volcanic rocks, rhyolitic in nature, at an elevation of about 7,000 feet. These tubers came from the so-called 'La Punta Hacienda,' about 7 miles northwest of Rincon de Romos, Aguascalientes." (Zabriskie.)

51347 to 51350.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the Bureau of Plant Industry. Received September 25, 1920. Quoted notes by Mr. Popenoe.

51347. *CANNA* sp. Cannaceæ.

Canna.

"(No. 433a. Santa Marta, Colombia. August 5, 1920.) Seeds of a common wild plant in the mountains south of Santa Marta, at altitudes not exceeding 2,000 feet. Its stems reach to 8 or 10 feet and are surmounted by clusters of small flowers, bright yellow, spotted with orange-red. Of interest only to those engaged in canna breeding."

51348 and 51349. *SOLANUM TUBEROSUM* L. Solanaceæ.

Potato.

51348. "(No. 435. Bogota. August 27, 1920.) Tubers of the *Caicera* potato, from the Bogota market. A somewhat flattened, smooth-skinned, rose-colored potato of very good quality. One of the favorite varieties in this part of the Andes."

51349. "(No. 436. Bogota. August 27, 1920.) Tubers of the *Tempranera* potato (early). From the Bogota market. An early variety of round form, rather small size, and light-brown skin. One of the principal varieties of this part of the Andes."

51350. *ZEA MAYS* L. Poaceæ.

Corn.

"(No. 434a. Bogota. August 27, 1920.) Native pop corn. The ears are from 4 to 6 inches long, the grains pale straw colored and translucent. It is said to come from the lowlands, and is much used as an article of food in Bogota, the grains being popped in the same manner as in the United States."

51351 to 51357.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received September 29, 1920. Quoted notes by Mr. Popenoe.

51351. *DATURA* sp. Solanaceæ.

"(No. 441a. Bogota. September 4, 1920.) Seeds of *borrachero*, or *chocolate sabanero*, from above Esperanza, Cundinamarca, at an altitude of about 6,000 feet. The common tree datura of the Bogota mesa and surrounding regions, used by the ancients as a narcotic."

51352. *FRAGARIA VESCA* L. Rosaceæ.

Strawberry.

"(No. 445. Bogota. September 4, 1920.) Plants of the *fresa*, the common wild strawberry of this section of the Andes, found in Cundinamarca on mountain slopes at altitudes of approximately 6,000 to 8,000 feet. The fruit is brought into the Bogota market in considerable quantities, and is said to be available at all seasons of the year. It is small, rarely over half an inch long, broadly oval to nearly round, and of pleasant flavor."

51351 to 51357—Continued.

51353. SOLANUM sp. Solanaceæ.

"(No. 440a. Bogota. September 4, 1920.) Seeds of a half-woody vine which climbs over small trees in the vicinity of Cachipay, on the railway between Bogota and Girardot (altitude about 6,000 feet). It has a leaf much like the tomato vine, and its small, white, star-shaped flowers are followed by clusters of egg-shaped fruits about half an inch long and of a bright brownish orange. I am told that these fruits are not edible, but I am inclined to think they are harmless."

51354. RUBUS URTICAEFOLIUS Poir. Rosaceæ.

Blackberry.

"(No. 438a. Bogota. September 4, 1920.) Seeds of a wild blackberry which is excellent, though the fruit is rather small. It is found on the mountain slopes at altitudes of 5,000 to 6,000 feet, above Esperanza, on the railway from Bogota to Girardot. The canes reach a length of about 10 feet and are more or less erect in habit. The flowers are small and white. The berries are produced in large clusters; individually they are one-half to three-quarters of an inch long, with the drupelets which compose them small, deep purple, and set closely together. The flavor of the ripe berry is sweet and pleasant."

51355. SOLANUM TUBEROSUM L. Solanaceæ.

Potato.

"(No. 442. Bogota. September 4, 1920.) Tubers of the *Criolla* potato from the Bogota market. One of the principal varieties cultivated in this region. A round, rather small, red-skinned potato with deep eyes."

51356. ZEA MAYS L. Poaceæ.

Corn.

"(No. 443a. Bogota. September 4, 1920.) Seeds of a peculiar variety of corn, with sulphur-yellow, starchy kernels; from the Bogota market."

51357. ERYTHRINA EDULIS Triana. Fabaceæ.

"(No. 437a. Bogota. September 4, 1920.) Seeds of a plant called *balu* in Cundinamarca; *chachafruto* in Antioquia; and *frijol nopas* in Santander.

"A small, soft-wooded tree whose seeds are an important article of food in certain parts of Colombia, notably on the western slope of the Cordillera Oriental. It is sometimes planted among coffee trees to provide shade for them, and it is often seen in dooryards and about the gardens of the natives. Anolaima, in Cundinamarca, is said to be one of the most important centers of production. The tree is grown in this part of Colombia at altitudes of 5,500 to 6,500 feet. The fact that it is seen only within this narrow zone would indicate that it is rather exacting in its climatic requirements.

"The tree grows to a height of 25 or 30 feet. The leaves are trifoliate, with the oblong-ovate to ovate, acute leaflets sometimes as much as 8 inches long. The flowers, produced in erect spikes, are about three-quarters of an inch long, and orange-scarlet. The fruit is a plump pod 6 to 18 inches long and about an inch thick. It contains several brown seeds of the form and character of the common bean, but much larger; they are usually 1 to 2 inches long, and very plump.

51351 to 51357—Continued.

"When fully mature, the pods (which are often borne in clusters of four or five) are picked and the beans prepared for eating by boiling in salted water. The leathery brown integument must first be removed; the cotyledons are then found to be white, tender, of very fine, somewhat mealy texture, and of an agreeable flavor suggesting that of the white bean, but more delicate, with a trace of sweetness.

"The Indians reckon the balu among their best foods. I believe the plant will succeed in southern Florida, but it is probably too tender for California."

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INVENTORY
OF
SEEDS AND PLANTS IMPORTED

BY THE

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
DURING THE PERIOD FROM OCTOBER 1
TO DECEMBER 31, 1920.

(No. 65; Nos. 51358 to 52305.)



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INTRODUCTORY STATEMENT.

During the autumn of 1920, the period covered by this inventory, Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture, was in Colombia and Ecuador, and his carefully selected plants comprise certain species heretofore unknown in North America. Those from the cool highlands may prove to be difficult to grow in this country because of their being accustomed to continual cool, foggy weather which at no time becomes cold enough to freeze. From Bogota he sends in the mountain papaya, *Carica candamarcensis* (No. 51389), which already seems to have proved its adaptability to the climate of San Diego, Calif.; *Cyclanthera pedata* (No. 51390), a new cucurbitaceous vegetable; a red-fruited passion vine, *Tacsonia* sp. (No. 51392); the capulin, *Prunus serotina* (No. 51393), a large-fruited wild cherry; the naranjilla, *Solanum quitoense* (No. 51394), with bright orange fruits like the tomato but with a leathery skin; a glossy yellow pepper, *Capsicum annuum* (No. 51396); and the curuba, *Tacsonia mollissima* (No. 51399), a large passion fruit, one of the most popular fruits of Bogota.

Mr. Popenoe's successful introduction of the Colombian blackberry, *Rubus macrocarpus* (Nos. 51401 and 51706), of El Penon, which has fruits more than 2 inches in length and is possibly the largest fruited species of all blackberries, should awaken the activities of the plant breeder and lead to crossing and selection work on a considerable scale to produce, if possible, larger and finer forms for the market.

Two new barberries, *Berberis rigidifolia* (No. 51787) and *B. quinduensis* (No. 51795), from an elevation of 9,000 feet in Colombia; a new holly, *Ilex* sp. (No. 51788), from the same region; and a crimson-flowered climber, *Mutisia clematis* (No. 51789), with flowers like small dahlias, are four of his finds.

The magnificent flowering tree, *Brownea grandiceps* (No. 51796), with flame-scarlet flowers in compact clusters; the canelo tree, *Drimys winteri* (No. 51797), with clusters of large white flowers; a species of *Carica* (No. 52299), with small fruits which are of a deep rich crimson color and very attractive but with whitish flesh, having an applelike scent; and a rapid-growing tree (No. 52304) from the Cauca Valley, which is worthy of trial as a street tree in southern Florida, are other results of his explorations.

The appreciation which the spring-flowering trees inspire nowadays should make Mr. Popenoe's flor de mico tree, *Phyllocarpus septentrionalis* (No. 51409), which flowers in January and February with a mass of crimson-scarlet blooms, a popular street or park tree in Florida. His wild Bogota strawberry, *Fragaria vesca* (No. 51564), may be valuable for breeding purposes; his chocho, *Lupinus cruckshanksii* (No. 51566), a 6-foot treelike lupine with varicolored flowers, is well worth growing, he believes. His two rare species of Tacsonia, *T. manicata* (No. 51567) and *T. pinnatistipula* (No. 51568), will add new material for the breeding of this neglected group of fruting vines; and the wild blackberry, *Rubus bogotensis* (No. 51569), from the sabana of Bogota, may be useful for breeding purposes.

Descriptions of the valuable plants collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture attached to the Smithsonian expedition, in his explorations in East Africa, continue to appear. Among them are many valuable things, including the doum palm, *Hyphaene thebaica* (No. 51440), distinguished as the only branching palm known. This species thrives in southern Florida and, since it is a beautiful landscape species, deserves to be widely planted there. A juniper, *Juniperus procera* (No. 51442), from the escarpment above the Rift Valley; a large, coarse grass, *Panicum quadrifarium* (No. 51446), from the banks of the Uaso Nyiro River; the beautiful liano (No. 51461), with clusters of deep reddish colored fruit, from the high forest region near Meru; a desert grass, *Cenchrus* sp. (No. 51488), with burlike seed, possibly valuable for our desert country; a Cotoneaster, *C. simonsi* (No. 51493), used for hedges in Nairobi; a large wild olive, *Olea chrysophylla* (No. 51519), from the highlands; a wild blackberry, *Rubus* sp. (No. 51535), of good flavor; a wild red raspberry, *Rubus* sp. (No. 51536), the Telfaria, *T. pedata* (No. 51542), a remarkable cucurbit bearing immense fruits which are filled with large edible seeds the size of a large almond; a new clover, *Trifolium* sp. (No. 51543), from Kenia Province; and *Trifolium tembense* (No. 51545) from the uplands of the same province, which thrives in very wet soil, are among the host of interesting things found by him. The extensive collections made during the last part of his African trip and including his stay in Uganda and the Anglo-Egyptian Sudan are comprised in his descriptions for Nos. 51898 to 52267. His collection of sorghums, beans, forage grasses, millets, cucumbers, cotton, etc., includes wild-growing forms as well as those cultivated by the agricultural tribes through whose land he traveled and can not fail to be of real value to the many research workers who are studying these important staple crops and are hunting for new characters to incorporate into our own highly developed varieties.

Doctor Shantz traveled more than 9,000 miles through the eastern portion of Africa from Cape Colony through to Egypt, and his more than 1,500 collections made through this vast territory and noted in this and the four preceding inventories include many introductions of great potential value for American agriculture. A map (Fig. 1) has been prepared, showing the region covered by his explorations.

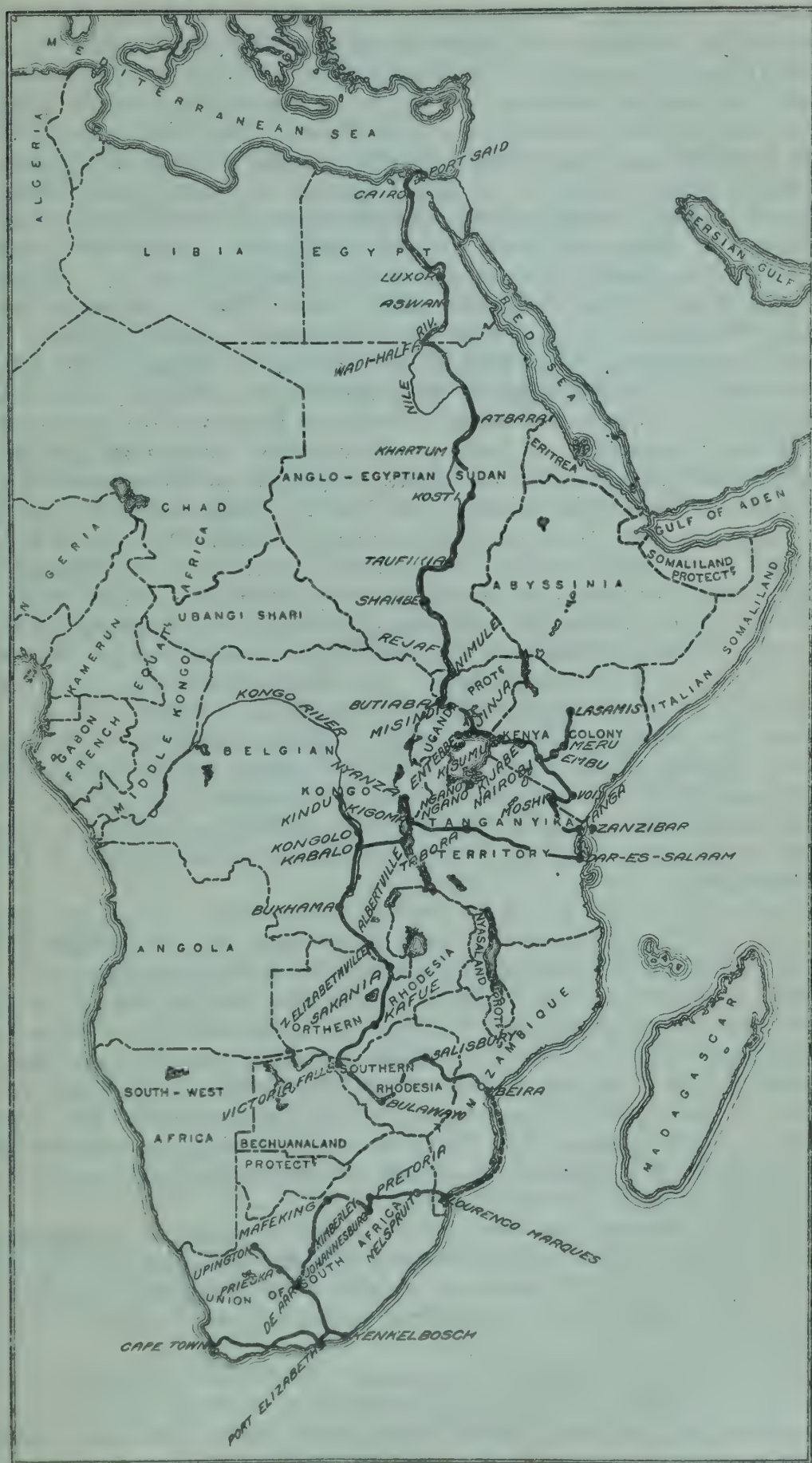


FIG. 1.—Map of South and East Africa, showing the route taken by Dr. H. L. Shants in his Cape-to-Cairo agricultural exploration trip during the years 1919 and 1920.

Joseph F. Rock, a contributor to these inventories for several years and at one time a collaborator of the Office of Foreign Seed and Plant Introduction while collecting in India, in this inventory begins to describe his first collections made as an agricultural explorer of the United States Department of Agriculture. His first expedition to Siam and Burma was made for the special purpose of procuring authentic living material of those species of forest trees from the seeds of which is obtained the chaulmoogra oil used in the cure of leprosy. In connection with his main object he picked up a number of new and valuable plants, which are described in this inventory. The goa bean, *Botor tetragonoloba* (No. 51765), cultivated in the Malay Peninsula, he declares is a delicious vegetable, better than green string beans, and since it has fruited in Brooksville, Fla., it deserves study by truck growers in the South. *Coleus rotundifolius* (No. 51768), a species of mint, he reports is grown for its tubers in the Malay Peninsula. It will produce tubers from cuttings in five months, but when planted as tubers refuses to produce new ones the first year. *Flacourtia rukam* (No. 51772), from Bangkok, he finds is a handsome new fruiting tree, producing fruits the size of a large cherry. *Mangifera odorata* (No. 51774), with very strong-smelling fruits, which he found at Bangkok, may furnish a better stock for the mango than the mango seedlings themselves. *Artocarpus champeden* (No. 51804), related to the jack fruit, according to Mr. Rock is preferred to it by the Malays. The Siamese chaulmoogra tree is specifically *Hydnocarpus anthelminthica* (No. 51773.)

From the Belgian Kongo, Father Vanderyst sends in a native legume, *Sphenostylis stenocarpa* (No. 51365), which forms edible tubers and is cultivated by the natives of German East Africa. These tubers have a flavor similar to that of potatoes, according to Doctor Zimmermann, the botanist who was stationed for years on Mount Kilimanjaro.

Populus charkowiensis (No. 51381), said to be one of the fastest growing of all poplars and a hybrid between the pyramidal poplar and the black poplar, has been procured from Orleans, France.

Fresh cassava roots as a starchy vegetable are beginning to make their appearance in southern Florida, but as yet their use is too little appreciated. The cassava is an enormous food producer and has the advantage over corn that its roots store themselves, so to speak, in the soil and do not need to be gathered at any definite time. Mr. Krauss has shown how certain Hawaiian varieties, *Manihot esculenta* (Nos. 51358 and 51359), respond remarkably to fertilizers and can be made to yield as much as 10 tons an acre.

The tulda bamboo has been so successful wherever it has grown in central Florida that another Bengal species, *Bambos balcooa* (No. 51361), said to be taller even and stouter than the tulda, should have an unusual interest to the growing group of people who are cultivating bamboos.

A tropical plum, *Prunus bolhariensis* (No. 51743), from the United Provinces of India, which, according to Mr. Rockey, who sends it, is a sweet-fruited variety, might have great value for the Southern States.

From Darwin, Northern Territory, Australia, Mr. Allen sends in *Andropogon bombycinus* (No. 51792), a species which grows in drifting sands and will endure much heat and drought.

The guar of India ought to be given unusual attention, and four new varieties, *Cyamopsis tetragonoloba* (Nos. 51598 to 59601), used as a vegetable, should be thoroughly tried because of the drought resistance of the species.

Vitex cuneata (No. 51604), with leaves larger than the horse-chestnut and large, highly scented flowers, may prove valuable as a shade tree in the South.

Ribes longeracemosum (No. 51617), from the mountains of western China, bears large black fruits in racemes 1½ feet long, and ought to be useful to plant breeders. If it proves resistant to the white-pine blister rust, for which black currants generally are hosts, it might be the beginning point of a race of long-clustered black currants.

Doctor Pittier has sent in a new cultivated fruit tree, the guayabo pesjua (No. 51626), an undescribed *Myrciaria*, which bears fruits that are favorites among the Venezuelans and should have a chance of succeeding in Florida.

Cuttings of *Pyrus malifolia* (No. 51702) have been procured from the Museum of Natural History in Paris. This is a supposed hybrid with leaves resembling those of the apple.

The guisquil de papa, *Chayota edulis* (No. 51704), is a perfectly smooth skinned white chayote, which when cooked is unusually mealy in texture and reported to be of a better flavor than the common kind. It should be widely tested wherever the chayote will grow.

Leonard Coates, of Morgan Hill, Calif., has been using the seeds of a hybrid peach-almond (No. 51705) as a stock and strongly recommends it as making double the growth of the ordinary peach.

The director of the plant-breeding station in Buitenzorg, Java, has sent a remarkable collection of palm seeds (Nos. 51707 to 51726 and 51733 to 51739) and seeds of screw pines or *Pandanus* (Nos. 51727 to 51732) for trial in Florida, where both palms and screw pines thrive remarkably well and are beginning to be of very great landscape importance.

The Turkish hazel, *Corylus colurna* (Nos. 51779 and 51780), of which Mr. Dunbar has a beautiful specimen in the park in Rochester, N. Y., unlike our hazel, is a good-sized tree, attaining when mature 60 feet in height. Its nuts, although smaller than the cobnut or commercial filbert, compare favorably with the wild American hazelnuts. This hazel will probably make a good nut tree for roadside planting in the Northern States.

The *Mimusops kauki* (No. 51820), which grows on the islands scattered around the Straits Settlements region, bears fruits resembling dates in shape which are of unusual value to the natives, who dry them and keep them for seasons of scarcity. Perhaps it would grow on the Florida keys.

The guada, *Trichosanthes anguina* (Nos. 51824 to 51827), is a rapid-growing cucurbit from the Solomon Islands which within a few months from the time of planting produces as much as 25 pounds of fruit. These are 3 to 6 feet long, range from orange to green in color, and weigh as much as 2 pounds apiece. When sliced and served with a French dressing they are said to be quite a luxury. They may serve as a substitute for cucumbers in the South.

Thomas Brown, of Egypt, sends a remarkable collection of *Crotularias* (Nos. 51832 to 51842), promising cover crops and humus-producing plants, for trial in California and Florida.

The Madrid Botanic Garden has furnished a valuable collection of the forage legume, lotus, embracing 14 species (Nos. 51856 to 51869) collected in Europe and Africa.

Through John Dunbar, of Rochester, N. Y., we have received for propagation material of what is probably the most satisfactory of all the poplars and one of the few large-leaved exotic trees that can be recommended for general planting in the Northern States, *Populus maximowiczii* (No. 51877). It grows 3 to 5 feet a year for the first eight years under conditions where the Norway maple will grow only 6 to 24 inches and the red and pin oak 12 to 30 inches. A tree at the Arnold Arboretum is now 20 years old and 35 feet tall.

There is a variety of sulla, *Hedysarum coronarium* (Nos. 51888 and 51889), occurring on the little island of Gozo (one of the Malta group), which matures earlier than the ordinary sort of this remarkable forage crop; it seems worth testing in the South where the ordinary sulla has not been a success, since it is caught by the fall frosts.

Paulownia fortunei (No. 52268), a Formosan flowering tree related to *Paulownia imperialis* but with whitish spotted flowers, has wintered in Washington successfully. Possibly it will prove a desirable ornamental park tree for the Southern States.

A. C. Hartless, of Seharunpur, sends in seeds of a tree of the caper family, *Crataeva religiosa* (No. 52286), the fruits of which are mixed with mortar to form strong cement. Just how it increases the strength of the cement is not clear.

To those interested in tropical persimmons, *Diospyros peregrina* (No. 52288), with fruits 2 inches across, may be useful.

The botanical determinations of seeds introduced have been made and the botanical nomenclature revised by H. C. Skeels, and the descriptive and botanical notes arranged by G. P. Van Eseltine, who has had general supervision of this inventory. The manuscript of this inventory has been prepared by Miss Esther A. Celandier and Miss Patty T. Newbold.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., March 18, 1922.

INVENTORY.¹

51358 to 51360. *MANIHOT ESCULENTA* Crantz. Euphorbiaceæ.

(*M. utilis* Pohl.)

Cassava.

From Haiku, Maui County, Hawaii. Cuttings presented by F. G. Krauss, superintendent of agricultural extension, Hawaii Agricultural Experiment Station, through J. M. Westgate, agronomist in charge, Honolulu. Received October 1, 1920. Quoted notes by Mr. Krauss.

"The cassava was grown on rough pineapple land, without fertilization and little or no cultivation (aside from the initial plowing under of the old pineapple stumps and one cross-plowing) to test its adaptability as a rotation crop. Harvested at the end of 15 months, on June 15, at the Haiku substation for the first test and at the close of a growing period of 18 months on four one-sixth-acre plats for the second test."

51358. "*Sweet white* (early maturing) culinary variety. First test: Clean roots per acre, 3,360 pounds. Second test: Check rows (no treatment), average of four plats, roots per acre, 3,129 pounds. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 6,258 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), roots per acre, 7,712 pounds."

51359. "*Bitter red* (late maturing) stock-feed variety. First test: Clean roots per acre, 24,360 pounds. Second test: Check rows (no treatment), average of four plats, roots per acre, 10,918 pounds. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 17,976 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 20,962 pounds. Starch recovered, 18 per cent."

51360. "*Martin's Intermediate* variety. First test: Clean roots per acre, 7,014 pounds. Second test: Check rows (on treatment), average of four plats, roots per acre, 4,326. Fertilized with 500 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 6,920 pounds. Fertilized with 1,000 pounds of phosphates (half super and half reverted), average of four plats, roots per acre, 11,802 pounds."

51361. *BAMBOS BALCOOA* Roxb. Poaceæ.

Bamboo.

From Lucknow, Oudh, India. Seeds presented by H. J. Davies, superintendent, Government Horticultural Gardens, through W. Bembower, Allahabad Agricultural Institute. Received October 1, 1920.

The large and characteristic bamboo of the Bengal villages, native to the plains of the eastern side of India, extending from Bengal into Assam and Cachar. It differs chiefly from *Bambos tulda* in its larger leaves, which are not pubescent

¹ It should be understood that the varietal names of fruits, vegetables, cereals, and other plants used in these inventories are those which the material bore when received by the Office of Foreign Seed and Plant Introduction and, further, that the printing of such names here does not constitute their official publication and adoption in this country. As the different varieties are studied, their identity fully established, their entrance into the American trade forecast, and the use of varietal names for them in American literature becomes necessary, the foreign varietal designations appearing in these inventories will in many cases undoubtedly be changed by the specialists interested in the various groups of plants and the forms of the names brought into harmony with recognized American codes of nomenclature.

and are possessed of distinct transverse veins. The joints of the rachis are short and glabrous. The plant has stems often 50 to 70 feet in height, stouter and taller than in *B. tulda*. *B. balcooa* is the best Bengal species for building, scaffolding, and other works which require both size and strength. Long immersion in water tends to make the timber firmer and proof against the attacks of the *Bostrychus* borer. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 39.)

51362. HYDNOCARPUS WIGHTIANA Blume. Flacourtiaceæ.

From Calcutta, India. Seeds presented by Harold R. Foss, American consul in charge. Received October 4, 1920.

A common tree of the western peninsula from the Konkan along the coast ranges of India. The seeds yield by expression, or by boiling in water, about 44 per cent of a tasteless, odorless, sherry-yellow oil which is chiefly used as a lamp oil in Goa. The seed has long been employed by the natives of the western coast ranges as a domestic remedy in cases of skin disease and as a dressing for wounds and ulcers. The oil is now used as an ingredient in a mixture for similar uses. Used internally in doses of 15 minims to 2 drachms, the oil has given satisfactory results as a substitute for the more expensive chaulmoogra oil in the treatment of leprosy. It is also used in the same way to treat secondary syphilis and chronic rheumatism. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 4, p. 308.)

51363. ALLIUM SATIVUM L. Liliaceæ.

Garlic.

From Shanghai, China. Sets presented by D. MacGregor, Superintendent of Parks, through Edwin S. Cunningham, American consul general. Received October 5, 1920.

"Sets of the best commercial varieties of garlic." (Cunningham.)

51364 and 51365.

From Kisantu, Belgian Kongo. Presented by Father Hyacinthe Vanderyst. Received October 7, 1920.

51364. CACARA EROSA (L.) Kuntze. Fabaceæ.
(*Pachyrhizus angulatus* Rich.)

Yam bean.

"A twining, wiry stemmed plant with large tuberous roots, occasionally grown in the West Indies. It has also been tested in Florida and has proved to be quite successful at Miami. Its roots, which are sometimes very large, contain much starch." (Wilson Popenoe.)

For previous introduction, see S. P. I. No. 47146.

51365. SPIHENOSTYLIS STENOCARPA (Hochst.) Harms. Fabaceæ.

"This legume forms edible tubers and is cultivated by the natives in German East Africa. The flavor of these tubers is similar to that of potatoes." (Dr. A. Zimmermann.)

For previous introduction, see S. P. I. No. 31194.

51366. ARALIA CACHEMIIRICA Decaisne. Araliaceæ.

From Rochester, N. Y. Plants presented by John Dunbar, assistant superintendent, Department of Parks. Received October 8, 1920.

This close relative of the udo (*Aralia cordata*) is found in temperate regions of the Himalayas in Sikkim and Kashmir, India, where it forms a lax shrub 5 to 10 feet in height. The leaflets of this species are said to have hairy upper surfaces, while those of the udo are glabrous. Also, the leaves of this species are quinate compound, while those of the udo are ternately or quinate compound. The umbels of flowers are borne in panicles up to a foot in length. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 722, and Bailey, *Standard Cyclopædia of Horticulture*, vol. 1, p. 344.)

51367. CARICA PAPAYA L. Papayaceæ.

Papaya.

From Swatow, Kwangtung, China. Seeds presented by Arthur H. Page. Received October 8, 1920.

"I am sending you a few seeds of my commonest papayas." (Page.)

For previous introduction, see S. P. I. No. 47586.

51368 to 51370.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received October 15, 1920. Quoted notes by Doctor Proschowsky.

51368. ASCLEPIAS CURASSAVICA L. Asclepiadaceæ. Milkweed.

"A small shrub with showy orange flowers, hardy here."

A subtropical perennial, native to the West Indies, with stems 2 or 3 feet in height and deep-green lanceolate leaves. The scarlet and saffron colored flowers are borne in upright umbels. (Adapted from *Edward's Botanical Register*, vol. 1, pl. 81.)

51369. EUPATORIUM sp. Asteraceæ.

"A large bush or small tree bearing feathery white flowers in great abundance nearly the whole year."

Received as *E. morrisii* Vis., a name which first appeared in a garden list without description. Apparently a description of the plant has never been published.

51370. MIMOSA GLOMERATA Forsk. Mimosaceæ.

"A perennial herbaceous plant whose stems die down in winter. It develops long, leafy shoots in spring, of which farm animals are very fond. It is quite spineless and very drought resistant, having a long tap-root, so that it may be of value as a forage plant for dry climates."

For previous introduction, see S. P. I. 34044.

51371 to 51373. CYAMOPSIS TETRAGONOLOBA (L.) Taub. Fabaceæ.
(*C. psoraloides* DC.) Guar.

From Poona, Bombay Presidency, India: Seeds presented by Dr. William Burns, economic botanist, Poona Agricultural College. Received October 15, 1920.

"An erect East Indian leguminous annual with long, straight stems bearing an enormous number of pods, each containing about seven pale, angular seeds. The plant grows 3 to 6 feet in height and in India is cultivated both for green forage and for the seed, which is used mainly for feeding cattle but also for human food. Guar may be grown anywhere in this country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or silage." (*C. V. Piper.*)

The following varieties were received:

51371. *Pardeshi.* **51373.** *Sotiya.*

51372. *Makhaniya.*

For previous introduction, see S. P. I. No. 49902.

51374 to 51376.

From Medellin, Colombia. Seeds presented by W. O. Wolcott. Received October 19, 1920.

51374. ANNONA MURICATA L. Annonaceæ. Soursop.

"The soursop, known in Spanish-speaking countries as the guanábana, is unexcelled for sherbets and refreshing drinks. The fruit is oblong, sometimes weighs 4 or 5 pounds, and has white flesh with a rich, aromatic flavor. The tree is tropical in its requirements and in the United States can be grown only in the southern part of Florida." (*Wilson Popenoc.*)

For previous introduction, see S. P. I. No. 47874.

51375 and 51376. RICINUS COMMUNIS L. Euphorbiaceæ. Castor-bean.

"I have a new kind of castor-bean which is twice the size of the ordinary kind; it is like a large Lima bean and is said to yield more oil than the ordinary bean." (*Wolcott.*)

51375. A. Seeds light gray overlaid with red markings.

51376. B. Seeds light gray overlaid with dark-brown markings.

51377 and 51378. ANANAS SATIVUS Schult. f. Bromeliaceæ. Pineapple.

From Pago Pago, American Samoa. Offshoots presented by Hon. Warren J. Terhune, governor. Received October 20, 1920.

"Offshoots of a very fine variety of Samoan pineapple." (L. W. Cartwright, private secretary to the governor.)

51379. PHLEUM PRATENSE L. Poaceæ. Timothy.

From Sydney, New South Wales. Seeds presented by George Valder, undersecretary and director, Department of Agriculture. Received October 20, 1920.

Seeds of locally grown timothy, introduced for the use of the Office of Forage-Crop Investigations.

"Grows on poor sandy soil; harvested in January, 1920." (Valder.)

51380. PYRUS sp. Malaceæ. Pear.

From Chico, Calif. Seeds collected by Galloway, Wight, and Allanson at the Plant Introduction Field Station. Received October 4, 1920.

These were removed from a collection of 125 different pears, mostly of Chinese varieties or hybrids, which were sent to Washington from Chico station. The seeds are to be planted and grown for the purpose of producing material of possible value as natural hybrids; also material for breeding purposes and for stock.

51381. POPULUS CHARKOWIENSIS Schroed. Salicaceæ. Poplar.

From Orleans, France. Cuttings purchased from Léon Chenault & Son. Received November 29, 1920.

This is said to be the fastest growing poplar known; it is very hardy and has very light wood. It is considered a hybrid between *P. pyramidalis* and *P. nigra*. (Adapted from *Mitteilungen der Deutschen Dendrologischen Gesellschaft*, No. 28, p. 143.)

51382 to 51386. AVENA SATIVA L. Poaceæ. Oats.

From Madrid, Spain. Seeds presented by Guillermo Quintanilla, director, Escuela Especial de Ingenieros Agronomos, through Ely E. Palmer, American consul. Received November 23, 1920. Quoted notes by Sr. Quintanilla.

51382. "*Adanero*, from Avila Province."

51383. "*Avena gris*, from Soria Province."

51384. "*Palacios de Goda*, from Avila Province."

51385. "*Avena blanca*, from Soria Province."

51386. "*Flores de Avila*, from Avila Province."

51387. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Taro.

From Yencheng, Kiangsu, China. Tubers presented by Rev. Hugh W. White, American Presbyterian Mission, South. Received December 10, 1920.

"This community is using the taro largely as a food article, answering somewhat to our potato, and we ourselves have discovered a method of preparation which makes it a most palatable dish." (White.)

"The tubers of this variety when cooked by boiling (early in December) were very moist and rather lacking in flavor, but the texture was smooth and other methods of preparation should make it more agreeable to the American palate. Judging from an earlier introduction [S. P. I. No. 34520] of this taro, the corn is mealy and otherwise of good quality." (R. A. Young.)

51388. XANTHOSOMA SAGITTAEFOLIUM (L.) Schott. Araceæ.**Yautia.**

From Coban, Alta Vera Paz, Guatemala. Tubers presented by Harry Johnson. Received October 12, 1920.

"The *Kesh-camote*, purchased in the market place, Coban. These appear to be very good examples of the common variety seen about here. Those grown at Chama are as a rule smaller. They are usually sold boiled and peeled, to be eaten out of hand, by the Indians. The custom of cooking the various native vegetables and selling them by portion is evidently an old one, as it is everywhere apparent." (*Johnson*.)

"The tuber of the *Kesh-camote* received is a white-fleshed yautia of very good quality. It is short and thick and about 5 ounces in weight." (*R. A. Young*.)

51389 to 51395.

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 13, 1920. Quoted notes by Mr. Popenoe.

51389. CARICA CANDAMARCENSIS Hook. f. Papayaceæ.

"(No. 456a. September 20, 1920.) *Papaya*. Evidently this hardy species, which is common in gardens on the mesa or plateau of Bogota, goes by the same name as the papaya of the lowlands, the true *Carica papaya*, although the two species are quite distinct in the character of their fruit.

"*Carica candamarcensis* is sufficiently hardy to be grown in many parts of southern California, and I believe it worth establishing in that State. I have grown it myself at Altadena, but unfortunately the plants were all of one sex, and I never had any fruit.

"In general appearance the species greatly resembles *C. papaya*, except that it is somewhat smaller in its leaves and fruits. It grows to about 20 feet in height. The fruits are the size of a large lemon, or about 4 inches long, elliptic in form and deeply ribbed. They are deep yellow or orange when ripe and very aromatic—quite a contrast in this respect to the true papaya. The flesh is scarcely half an inch thick, and the seed cavity is filled with seeds and the arils which surround them. The fruit is not eaten out of hand but is cooked in sirup, to make a very good dulce."

For previous introduction, see S. P. I. No. 49473.

A fruiting tree of this species is shown in Plate I.

51390. CYCLANTHERA PEDATA (L.) Schrad. Cucurbitaceæ.

"(No. 458a. September 20, 1920.) A cucurbit commonly sold in the market of Bogota and falsely called *pepino* (cucumber), since it is not eaten as a salad, like the cucumber, but is served relleno or stuffed with forcemeat and baked, as are sweet peppers in the North. It is long and slender, tapering to a point at the apex; about 5 inches long, light green, with a hollow cavity in the center."

For previous introduction, see S. P. I. No. 29330.

Fruits of this vine are shown in Plate II.

51391. LAVATERA ASSURGENTIFLORA Kellogg. Malvaceæ.

"(No. 455a. September 20, 1920.) *Malvisco*. A malvaceous shrub cultivated in dooryards at Nemocon, north of Bogota, at an altitude of about 8,600 feet. The plant reaches about 8 feet in height, is half woody and bushy in habit. The flowers are about 2 inches broad, somewhat like hollyhocks in form, and purplish red."

51392. TACSONIA sp. Passifloraceæ.

"(No. 461a. September 20, 1920.) *Curuba*. This is a somewhat rare species with red fruits (wherein it differs from the common *curuba* of this region). Also, I believe the plant is somewhat more decorative than the common species, the flowers being of a livelier shade of pink.

51389 to 51395—Continued.

The fruits are 2 to 4 inches long, somewhat more slender toward the base than near the apex, and greenish crimson when ripe. In quality they are perhaps not so good as those of the common *curuba* or *curuba de Castilla*. The plant is a climber, reaching, perhaps, 15 or 20 feet."

For previous introduction, see S. P. I. No. 42032.

51393. *PRUNUS SEROTINA* Ehrh. Amygdalaceæ.

Capulin.

"(No. 460a. September 20, 1920.) *Cereza*. The wild cherry of the Andes, which appears to be about the same as the *cereza* of Guatemala and southern Mexico. The tree, which is common on the plateau of Bogota, grows to about 40 feet in height and is stout. The leaves are long and slender, and the white flowers are borne in racemes up to 6 inches long. The fruits are half an inch or more in diameter, oblate, dark maroon, and of pleasant but not pronounced flavor."

For previous introduction, see S. P. I. 44885.

51394. *SOLANUM QUITOENSE* Lam. Solanaceæ.

Naranjilla.

"(No. 459a. September 20, 1920.) *Lulu*. A solanaceous plant, probably a shrub, bearing broadly ovoid to round, bright-orange fruits about 2 inches in diameter. These have a leathery skin, inclosing peculiarly translucent greenish flesh and many small flattened seeds. The flavor is subacid and somewhat aromatic; the fruit is used to make a refreshing drink, or it is sometimes eaten out of hand."

For previous introduction, see S. P. I. No. 47951.

51395. *DESFONTAINEA SPLENDENS* Humb. and Bonpl. Loganiaceæ.

"(No. 462a. September 20, 1920.) A shrub from the mountains above Fusagasuga, at 9,400 feet altitude. It is broad and compact in habit, reaching to about 5 feet in height. Its leaves resemble those of the holly in form and character, but are of a lighter shade of green. The flowers are tubular, about an inch long, red below and yellow at the mouth. The plant is an attractive one, and is recommended for trial as an ornamental."

51396 to 51403.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 4, 1920. Quoted notes by Mr. Popenoe.

51396. *CAPSICUM ANNUUM* L. Solanaceæ.

Pepper.

"(No. 450a. September 11, 1920.) Seeds of *aji*, a yellow pepper from the Bogota market. It is somewhat conical in form, about 2 inches long, rich glossy yellow, and has fairly thick flesh. It is not so piquant as the small chilies, but more so than the sweet peppers."

51397. *OXALIS TUBEROSA* Molina. Oxalidaceæ.

"(No. 447. September 11, 1920.) Tubers of *hibia*, one of the favorite root crops of the Indians, by whom it has been cultivated since pre-Columbian times. It has the disadvantage (for the North) that it requires nearly a year to reach maturity, and as it is not very hardy, it will probably not be possible to cultivate it in the northern United States. It likes a cool climate, soft rich soil, and abundant moisture."

For previous introduction, see S. P. I. No. 46659.

51398. *PASSIFLORA LIGULARIS* Juss. Passifloraceæ. Sweet granadilla.

"(No. 452a. September 11, 1920.) Seeds of the *granadilla*, commonly cultivated in the highlands of Cundinamarca up to 6,500 feet altitude. The fruit is oval to nearly round, nearly 3 inches long, brown, and somewhat spotted on the surface, with a brittle shell inclosing flattened black seeds surrounded by translucent, juicy, whitish pulp of pleasant, subacid, slightly aromatic flavor. It is perhaps not quite so good as the *granadilla* of Guatemala."

For previous introduction, see S. P. I. No. 49146.

51399. *TACSONIA MOLLISSIMA* H. B. K.

"(No. 449a. September 11, 1920.) Seeds of the *curuba*, or *curuba de Castilla*. This species is more commonly cultivated on the mesa of Bogota than any of the several others whose fruits are also known as



THE MOUNTAIN PAPAYA IN FULL BEARING. ((*CARICA CANDAMARCENSIS* HOOK, F.; S. P. I. No. 51389.)

A few trees of this species have been grown in California, and Mr. Popenoe believes that it is worth establishing in that State. The tree is hardier than the papaya and may serve as a factor in breeding hardier strains of that delicious fruit. The deep-yellow or orange fruits of the mountain papaya are about the size of a large lemon and are very aromatic; cooked in sirup, they make an excellent dulce. (Photographed by Wilson Popenoe, Nemocon, Colombia, September 8, 1920; P18016FS.)



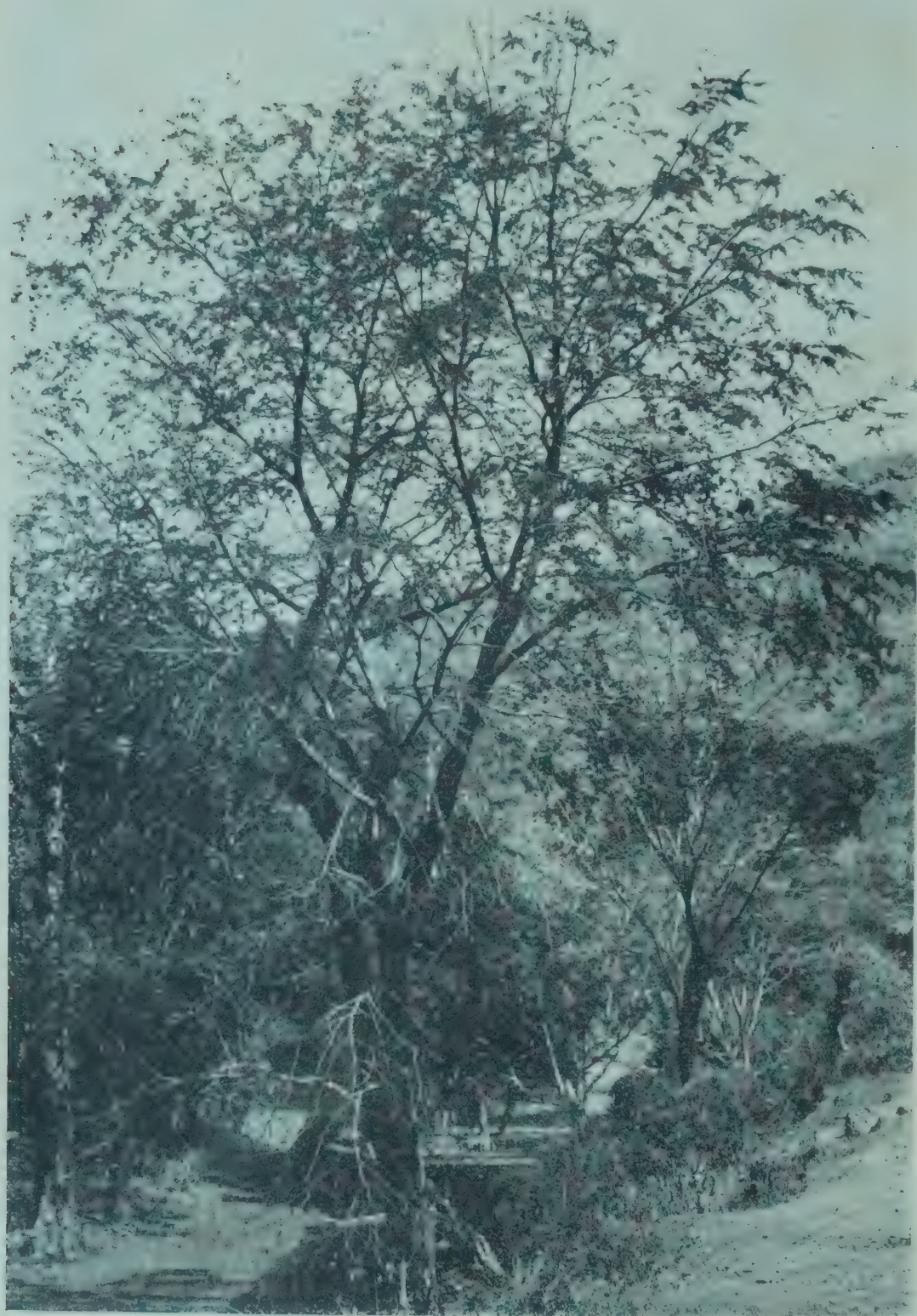
A NEW VEGETABLE FROM COLOMBIA. (*CYCLANTHERA PEDATA* (L.) SCHRAD.;
S. P. I. No. 51390.)

Commonly sold in the markets of Bogota under the misleading name of "pepino," this vegetable, borne on a vine like the cucumber, is said by Mr. Popenoe to be served stuffed with chopped meat and baked, as are sweet peppers in the North. It is not eaten as a salad like the true pepino (*Solanum muricatum*). (Photographed, natural size, by Wilson Popenoe, Bogota, Colombia, August 26, 1920; P18035FS.)



THE GIANT COLOMBIAN BERRY. (*RUBUS MACROCARPUS* BENTH.; S. P. I. No. 51401.)

These berries, which are here shown natural size, are possibly the largest fruited of all known blackberries; and their introduction by Mr. Popenoe should stimulate work in selecting and crossing to produce, if possible, larger and finer forms of blackberries for American markets. (Photographed by Wilson Popenoe, El Penon, Colombia, October 16, 1920; P18152FS.)



A MAGNIFICENT FLOWERING TREE FROM EASTERN GUATEMALA. (PHYLLOCARPUS SEPTENTRIONALIS DONN.-SMITH; S. P. I. No. 51409.)

This tree, the *flor de mico*, as it is called in Guatemala, may be compared with the royal poinciana when in bloom, though the individual flowers are smaller than in that species. The great masses and deeper scarlet color more than compensate for their smaller size, however; and since the tree is semideciduous at flowering time, the general effect is even more brilliant than that of the poinciana. It flowers in January and February. (Photographed by Wilson Popenoe, El Barranquillo, Guatemala, January 29, 1920; P17718FS.)

51396 to 51403—Continued.

curuba. The vine is not quite so ornamental as that of some other species, but the fruit is considered one of the best. It is slender oblong-oval, 2 to 4 inches long, and slightly more than an inch thick, with a thin, leathery pericarp (not brittle, as in most other species) inclosing many black seeds, each surrounded by an orange-colored, juicy aril. The flavor is sprightly and aromatic. While much eaten out of hand, the fruit is perhaps best when prepared in the form of *creme de curuba* or when made into an ice. Certainly the *curuba* is one of the most popular fruits in Bogota."

For previous introduction, see S. P. I. No. 43766.

51400. *PHYSALIS PERUVIANA* L. Solanaceæ.

Poha.

"(No. 451a. September 11, 1920.) Seeds of *uchuba*, a form of the ground cherry, or husk cherry, cultivated in the Colombian highlands. The plant reaches about 4 feet in height, and the fruits are oval to nearly round, up to an inch in length, deep yellow when fully ripe, and much esteemed for making dulces, or preserves."

For previous introduction, see S. P. I. No. 48181.

51401. *RUBUS MACROCARPUS* Benth. Rosaceæ.

Colombian berry.

"(No. 446a. September 11, 1920.) Seeds of the *mora*. This is the giant Colombian blackberry, first called to our attention by Frank M. Chapman, of the American Museum of Natural History, and last year introduced into the United States, on a very limited scale, through the efforts of Frederick L. Rockwood, of Bogota. It is a remarkable berry and one which will be of great interest, I believe, to North American horticulturists.

"Frank M. Chapman, M. T. Dawe, and others have spoken of this species as the *mora de Castilla*. This name is, indeed, sometimes applied to it, but it is given to various species of *Rubus* as well, the term 'de Castilla' being applied to a great many products of the country, signifying that they are of good quality (everything good being supposed to emanate in colonial days from Castile or Spain). Many of the natives with whom I have talked know the species simply as *mora*. Since it is not greatly like our northern berries I suggest that it be called the *Colombian berry* instead of the giant blackberry, thus honoring the land of its origin.

"The species seems limited to regions of very particular climatic conditions; I have seen it only at altitudes of 8,500 to 9,500 feet, in moist mountain meadows on the outer edge of the mesa or plateau of Bogota, where the clouds drift up from the valley and keep the plants bathed almost constantly in mist. It grows among brush and large ferns, its coarse canes reaching to about 10 feet in height and often recurving somewhat. The leaves, which are trifoliate, are large and coarse. The flowers are produced singly at the ends of stalks 3 to 5 inches long, half a dozen or more of them arising from the summit of a single cane. The flowers are rosy purple and nearly an inch in diameter.

"The berries, which ripen principally from October to December in the region where I have studied the plant (El Penon, between Sibate and Fusagasuga), are variable in form, some being heart shaped and compressed on two sides, others ovoid, and still others oblong. The largest are about 2 inches in length. The individual drupelets are large, and each contains a hard, slender, oblong seed; the torus or receptacle is large and extends well into the center of the fruit; when ripe it separates readily from the drupelets and can be removed before the fruit is eaten. The color of the ripe berry is deep maroon-red. It is juicy and of pleasant flavor, not distinctly resembling the blackberry in this particular. It is used mainly for preserving or making dulces and is frequently seen in the Bogota markets, where it is much in demand and commands a good price."

Plate III shows two fruits (natural size) of this species.

51402. *RUBUS* sp. Rosaceæ.

Blackberry.

"(No. 453a. September 11, 1920.) Seeds of *mora*, a fine large blackberry from the Bogota market. The fruits are 1½ inches long, thick in proportion to their length, and of good flavor and quality. The species grows wild not far from Bogota."

51396 to 51403—Continued.

51403. *ULLUCUS TUBEROSUS* Caldas. Basellaceæ.

"(No. 448. September 11, 1920.) Tubers of the *chugua*. Like the *hibia* (*Oxalis tuberosa*), the *chugua* is one of the root crops which has been cultivated by the Indians of the Andes since prehistoric times. The plant is a slender creeper, making stems 2 or 3 feet in length which trail over the ground. It matures in about six months and may be planted (there in Colombia) at any season of the year. The tubers resemble in form small potatoes, but are rosy red or light yellowish green. They are oval and rarely over 3 inches long.

"Like the *hibia* and *cubio*, the *chugua* is usually eaten after boiling with meat or it forms one of the ingredients of a vegetable stew. It likes a light soil and plenty of moisture."

For previous introduction, see S. P. I. No. 41196.

51404 to 51414.

From the city of Guatemala, Guatemala. Seeds forwarded by H. W. Gofforth, American consul, at the request of Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received October 14, 1920. Quoted notes by Mr. Popenoe unless otherwise stated.

51404. *ANNONA DIVERSIFOLIA* Safford. Annonaceæ.

Ilama.

"A small tree with thin, membranaceous foliage and large, conoid, or broadly ovoid fruits about 6 inches long. The edible pulp is cream colored or rose tinted, inclosing hard, smooth, nutlike seeds. The tree is native to southern Mexico and has been introduced into southern Florida." (W. E. Safford.)

For previous introduction, see S. P. I. No. 46781.

51405. *BYRSONIMA SPICATA* (Cav.) DC. Malpighiaceæ.

"Nance; flower red and yellow."

51406. *ENTEROLOBIUM CYCLOCARPUM* (Jacq.) Griseb. Mimosaceæ.

"Guanacaste; white flowers."

One of the most beautiful and one of the largest trees of the Pacific region of tropical America, where it grows to an altitude of 900 meters. The trunk sometimes becomes a meter in diameter. The compound leaves close up during the night, and the pods are twisted into a short spiral. The leaves and pods are much relished by cattle. (Adapted from Pittier, *Plantas Usuales de Costa Rica*, p. 98.)

For previous introduction, see S. P. I. No. 44746.

51407. *GUAIAECUM GUATEMALENSE* Planch. Zygophyllaceæ.

"Guayacan; purple flowered."

"A small tree, sometimes 30 feet high, with a gnarled and twisted trunk, slender branches, and small, delicate leaves. In February or March the tree comes into flower and is then a mass of lavender purple; it remains in bloom several weeks. The wood is exceedingly hard and is of value for cabinet purposes. The heartwood is a rich brown, while the sapwood is light yellow; both take a fine polish. The tree thrives in a warm climate with little rain."

For previous introduction, see S. P. I. No. 47900.

51408. *ZIZIPHUS* sp. Rhamnaceæ.

"Cerezo; white flowered."

51409. *PHYLLOCARPUS SEPTENTRIONALIS* Donn.-Smith. Cæsalpiniaceæ.

"Flor de mico; red flowers."

"A magnificent flowering tree found in sandy loam in eastern Guatemala, at 1,500 to 2,000 feet altitude. It is of broad, spreading habit 46 or 50 feet high, with light-green compound leaves. In January and February the tree is a mass of crimson-scarlet flowers, which are borne in small clusters and are each about an inch broad."

For previous introduction, see S. P. I. No. 44775.

A tree of this species is shown in Plate IV.

51404 to 51414—Continued.51410. *SAPINDUS SAPONARIA* L. Sapindaceæ.

"Jaboncillo; white flowers."

51411. (Undetermined.)

"Chaparron; yellow flowers."

51412. (Undetermined.)

"Cabritos; yellow flowers."

51413. (Undetermined.)

"Canjuriol; white flowers."

51414. (Undetermined.)

[No label.]

51415 to 51418.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States of Department of Agriculture. Received October 27, 1920. Quoted notes by Mr. Popenoe.

51415. *HORDEUM DISTICHON NUDUM* L. Poaceæ. Naked barley.

"(No. 464a. September 22, 1920.) *Perlada* (pearl) barley, grown upon the mesa, or sabana (plain), of Bogota, at an altitude of approximately 8,500 feet."

For previous introduction, see S. P. I. No. 41162.

51416 and 51417. *SOLANUM TUBEROSUM* L. Solanaceæ. Potato.

51416. "(No. 465. September 22, 1920.) Tubers of one of the principal varieties sold in the Bogota market. The tubers are compressed or flattened, nearly smooth, and light brown; a good variety."

51417. "(No. 466. September 22, 1920.) Tubers of one of the common potatoes of the Bogota market, and grown nearby in the Andes. The tubers are round, rather irregularly so, as a rule, with shallow eyes and they are mottled dull maroon and whitish brown."

51418. *TRITICUM AESTIVUM* L. Poaceæ. Common wheat.
(*T. vulgare* Vill.)

"(No. 463a. September 22, 1920.) *Pocho* wheat. A variety cultivated on the mesa (sabana) of Bogota at an altitude of about 8,500 feet."

51419. *COLOCASIA ESCULENTA* (L.) Schott. Araceæ. Taro.

From Buitenzorg, Java. Tubers presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received November 16, 1920.

"*Talus belang*. A taro having slightly yellowish flesh and a distinctive flavor. The leaf stem is pale green, streaked with bronze; the blade is marbled light and dark green." (R. A. Young.)

For previous introduction, see S. P. I. No. 20954.

51420. *SORBUS DOMESTICA* L. Malaceæ. Service tree.

From Boston, Mass. Seeds seized on board ship by the Federal Horticultural Board. Received October 28, 1920.

Variety *pyriformis*. This variety has pear-shaped fruits about 1½ inches long and 1½ inches in diameter.

51421 and 51422. *CHAYOTA EDULIS* Jacq. Cucurbitaceæ.
(*Sechium edule* Swartz.) Chayote.

From Coban, Alta Vera Paz, Guatemala. Fruits presented by Harry Johnson. Received October 5, 1920.

51421. White variety. 51422. Green variety.

"*Perulero*. The green variety is very much scarcer than the white and is perhaps better." (Johnson.)

51423. PHLEUM PRATENSE L. Poaceæ.**Timothy.**

From Copenhagen, Denmark. Seeds presented by Axel Lange, curator Botanic Garden. Received October 12, 1920.

"These seeds are partly from plants grown in our garden and partly from wild plants." (*Lange*.)

51424. CHAMAEDOREA sp. Phœnicaceæ.**Pacaya.**

From Coban, Alta Vera Paz, Guatemala. Seeds presented by Harry Johnson. Received October 18, 1920.

"Seeds of the *pacaya*." (*Johnson*.)

For previous introduction, see S. P. I. No. 49325.

51425. CANARIUM LUZONICUM (Blume) A. Gray. Balsameaceæ.

From Manila, Philippine Islands. Seeds presented by A. Hernandez, director, Bureau of Agriculture. Received October 18, 1920.

"Seeds of *pisa*. The tree grows wild in the Philippines and is now under cultivation." (*Hernandez*.)

This tree is the source of the brea blanca of commerce. The stone of the fruit contains an oily endosperm which is very palatable.

For previous introduction, see S. P. I. No. 47205.

51426. DIOSCOREA LATIFOLIA Benth. Dioscoreaceæ.**Acom.**

From Nicaragua. Tuber presented by Dr. Luis Sequeira, Bluefields. Received October 19, 1920.

"*Papa cariba*, or 'Carib potato,' which grows wild in this country. The vines bear twice a year, and the tubers are eaten in the same way as the Irish potato. This vine bears from 20 to 50 tubers, chiefly kidney shaped, and weighing from 6 ounces to 1½ pounds." (*Sequeira*.)

This yam appears to be of the same kind as the *caissara*, or "turkey-liver yam," previously received from Brazil. (See S. P. I. No. 47564.) The tubers are aerial.

51427. PISUM SATIVUM L. Fabaceæ.**Garden pea.**

From New York City. Seeds presented by J. W. Pincus. Received October 19, 1920.

"A variety of pea developed by Doctor Mansholt, an excellent breeder, who resides in the Province of Groningen, Netherlands." (*Pincus*.)

51428 to 51463.

From Kenia, Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 10, 1920. Quoted notes by Doctor Shantz.

51428. ACACIA sp. Mimosaceæ.

"(No. 1029. Uaso Nyiro River, Kenia Province. June 15, 1920.) A low spreading form, very abundant in desert sections."

51429. CALOTROPIS PROCERA Ait. Asclepiadaceæ.

"(No. 1017. Merile, Nyanza Province. June 30, 1920.) A very large plant with inflated pods 6 inches or more long. It grows along the sandy banks of dry rivers."

51430. CITRULLUS VULGARIS Schrad. Cucurbitaceæ.**Watermelon.**

"(No. 1174. Nairobi, Ukamba Province. July 7, 1920.) The *gosha* melon."

51431. COFFEA sp. Rubiaceæ.**Coffee.**

"(No. 1136. Kabete, Ukamba Province. June 26, 1920.) *Nandi* coffee, a wild coffee from the Nandi forest. It has small branches, much smaller than those of *Blue Mountain*, and a peculiar chicorylike flavor. It can not be pruned to advantage."

51428 to 51463—Continued.

51432. *DIGITARIA ABYSSINICA* (Hochst.) Stapf. Poaceæ. Grass.

"(No. 1149. Escarpment, Ukamba Province. July 4, 1920.) A very small grass with a habit similar to that of kikuyu grass (*Pennisetum clandestinum*). It is closely grazed by stock."

51433. *DOLICHOS LABLAB* L. Fabaceæ. Hyacinth bean.

"(No. 987. Meru, Kenia Province. May 21, 1920.) A flat black bean with a large white hilum; obtained in market. This bean is extensively grown by the Kikuyus."

For previous introduction, see S. P. I. No. 47978.

51434. *ELICHRYSUM* sp. Asteraceæ.

"(No. 1163. Kijabe, Ukamba Province. July 5, 1920.) A small yellow straw flower."

51435. *GLADIOLUS* sp. Iridaceæ. Gladiolus.

"(No. 1087. Fort Hall, Kenia Province. June 17, 1920.) Has a red flower with yellow on the lower side; the petals are very large at times."

51436. *HIBISCUS* sp. Malvaceæ.

"Purple or lavender."

Pods of hibiscus included in a shipment sent from Nairobi; without a number or data.

51437. *HIBISCUS* sp. Malvaceæ.

"(No. 1157. Kijabe, Ukamba Province. July 5, 1920.) A small white-flowered type; an attractive shrub."

51438. *HIBISCUS* sp. Malvaceæ.

"(No. 1168a. Nairobi, Ukamba Province. July 7, 1920.) From the Botanic Garden; a rather unattractive plant with a large pretty flower."

51439. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

"(No. 1098. Fort Hall, Kenia Province. June 17, 1920.) A lot of seed collected between Fort Hall and Nairobi."

51440. *HYPHAENE THEBAICA* (L.) Mart. Phœnicaceæ. Doum palm.

"(No. 1028. Uaso Nyiro River, Kenia Province. June 15, 1920.)"

The doum palm is distributed from Upper Egypt to Central Africa and is usually not more than 25 feet in height; in old trees the stem is sometimes forked three or four times. The fruits, which are borne in long clusters, from 1 to 200 in a cluster, are yellowish brown and beautifully colored. In East Africa they are eaten by elephants and by natives and whites, especially in times of shortage of other foods. In Upper Egypt they form part of the food of the poorest classes, the part eaten being the fibrous mealy husk, which tastes much like gingerbread but is of a rather dry and husky nature. The hard, tough wood is used for making various domestic utensils. (Adapted from *Lindley and Moore, Treasury of Botany, vol. 2, p. 612.*)

For previous introduction, see S. P. I. No. 47402.

For an illustration showing the doum palm in its native habitat, see Plate V.

51441. *INULA* sp. Asteraceæ.

"(No. 1166. Kijabe, Ukamba Province. July 5, 1920.) A large blue-flowered plant, reminding one of *Centaurea*."

51442. *JUNIPERUS PROCERA* Hochst. Pinaceæ. Juniper.

"(No. 1162. Kijabe, Ukamba Province. July 5, 1920. Herb. No. 880.) A prominent forest tree along the escarpment above the Rift Valley. Probably the Abyssinian juniper."

51443. *LINUM USITATISSIMUM* L. Linaceæ. Flax.

"(No. 1169. Nairobi, Ukamba Province. July 7, 1920.) Dutch Child, imported from Yorkshire; 1919 crop."

51444 and 51445. *ORYZA SATIVA* L. Poaceæ. Rice.

51444. "(No. 1170. Nairobi, Ukamba Province. July 7, 1920.) Mountain rice, from India."

51445. "(No. 1172. Nairobi, Ukamba Province. July 7, 1920.) Mountain rice (*Mazeras*)."

51428 to 51463—Continued.

51446. *PANICUM QUADRIFARIUM* Hochst. Poaceæ.

Grass.

"(No. 1021. Uaso Nyiro River. June 14, 1920.) A large, coarse grass resembling *Chaetochloa*, abundant along the river bank."

A stoloniferous grass which thrives in marshy places, 1 to 2 meters in height, with dense foliage at the base. (Adapted from *Chiovenda, Etiopia, Osservazione Botaniche*, p. 70.)

51447 and 51448. *PENNISETUM GLAUCUM* (L.) R. Br. Poaceæ.*(P. typhoideum* Rich.)

Pearl millet.

51447. "(No. 990. Meru, Kenia Province. May 25, 1920.) One of the most prominent crops of this region; it is flailed and winnowed and constitutes the chief food of the natives."

For previous introduction, see S. P. I. No. 49702.

51448. "(No. 1014. Meru, Kenia Province. June 16, 1920.) The chief crop of this section."

51449 and 51450. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

51449. "(No. 1051. Meru, Kenia Province. June 16, 1920.) A bean with a white stripe, grown by the Kikuyus."

51450. "(No. 1118. Nairobi, Ukamba Province. June 24, 1920.) *Rose-coco* beans from the Kibos Experiment Farm."

51451. *PHOENIX RECLINATA* Jacq. Phœnicaceæ.

Palm.

"(No. 1002. Near Meru, Kenia Province. June 12, 1920.) A most attractive palm, growing in the canyons near Meru."

A hardy ornamental palm, not very tall but often reclining. The sweet coating of the drupaceous fruit is edible. This palm is distributed throughout tropical Africa. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 259.)

For previous introduction, see S. P. I. No. 23424.

51452. *PISUM SATIVUM* L. Fabaceæ.

Garden pea.

"(No. 1049. Meru, Kenia Province. June 16, 1920.) Peas from the market; these are grown by the Kikuyus."

51453 and 51454. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

51453. "(No. 989. Meru, Kenia Province. May 25, 1920.) Similar to No. 988 [S. P. I. No. 51532] but larger. This large form is very abundant in the mountain country, where the plants are tree-like, 10 to 15 feet high."

51454. "(No. 1165. Kijabe, Ukamba Province. July 5, 1920.) This was growing wild on the escarpment of the Rift Valley."

51455. *SAMANEA SAMAN* (Jacq.) Merr. Mimosaceæ.*(Pithecolobium saman* Benth.)

"(No. 1171. Nairobi, Ukamba Province. July 7, 1920.)"

A large spreading tree, 15 to 20 meters high, native to Central America, but widely distributed throughout the Tropics as an ornamental and shade tree; the horizontal branches are extremely long. The wood is not very hard, but the heartwood is of a handsome red color, taking a fine polish. The pods are eagerly eaten by cattle. (Adapted from *Cook and Collins, Economic Plants of Porto Rico*, p. 220.)

For previous introduction, see S. P. I. No. 38654.

51456. *SESAMUM ORIENTALE* L. Pedaliaceæ.

Sesame.

"(No. 1173. Nairobi, Ukamba Province. July 7, 1920.) *Black til*."

51457. *VERNONIA* sp. Asteraceæ.

"(No. 1151. Kijabe, Ukamba Province. July 5, 1920.) A beautiful Vernoniolike bush."

51458 to 51460. *ZEA MAYS* L. Poaceæ.

Corn.

51458. "(No. 986. Meru, Kenia Province. May 26, 1920.) Native-grown corn from the market."

51459. "(No. 1086. Fort Hall, Kenia Province. June 17, 1920.) The type grown here in the high country."

51460. "(No. 1139. Kabete, Ukamba Province. June 26, 1920.) A hybrid corn known as 'Fort Hall.'"

51428 to 51463—Continued.

51461. (Undetermined.)

"(No. 996. Near Meru, Kenia Province. June 12, 1920.) *Liano*; beautiful clusters of deep reddish velvetlike fruits about the size of a small grape. This is one of the most showy plants of the high forest region; it is not edible, but is exceptionally ornamental."

51462. (Undetermined.)

"(No. 1013. Meru, Kenia Province. June 15, 1920.) *Maret* (in Somali); a small tree with a yellow sweetish fruit said to be good food. The fruit is about three-eighths of an inch long and roundish."

51463. *DISSOTIS EXIMIA* (Sond.) Hook. f. Melastomaceæ.

"(No. 1071. En route from Chuka to Embu, Kenia Province. June 16, 1920.) A very attractive plant with purple flowers. It grows well in the bracken area about Kenia."

51464 to 51479.

From Siam and China. Plants presented by G. Weidman Groff. Received October 16, 1920. Quoted notes by Mr. Groff unless otherwise specified.

51464. *DURIO ZIBETHINUS* Murray. Bombacaceæ.

Durian.

"Durian seedlings from Siam."

"In the Malay Archipelago where it is native the durian becomes a large tree, with leathery leaves 6 to 7 inches long and oval fruits from 6 to 8 inches in length. The fruit is five valved, and within each compartment are several seeds surrounded by clear, pale-brown, custard-like pulp of strong gaseous odor and rich bland taste. As remarked by Doctor Paludanus: 'The fruit seems at first to smell like rotten onions, but immediately after tasting it is preferred to all other food.' The durian is tropical in its requirements and should be quite at home in many places in the West Indies. It is ordinarily propagated by seeds, although P. J. Wester has shown that it can be budded." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 45179.

51465. *GARCINIA MANGOSTANA* L. Clusiaceæ.

Mangosteen.

"Sent from Siam by Dr. Y. S. Sanitwongse."

"This delicious fruit is about the size of a mandarin orange, round and slightly flattened at each end, with a thick, smooth rind, rich red-purple in color, which, when cut out, exposes the white segments lying loose in the cup. The cut surface of the rind is a most delicate pink. The separate segments are whitish and covered with a delicate network of fibers. The texture of the pulp resembles that of the plum, and the flavor is indescribably delicious." (*David Fairchild*.)

For previous introduction, see S. P. I. No. 47120.

51466 to 51472. *LITCHI CHINENSIS* Sonner. Sapindaceæ.

Lychee.

(*Nephelium litchi* Cambess.)

"The lychee has been cultivated for at least 2,000 years in southern Asia, where millions are familiar with it. The tree grows ultimately to a height of 35 or 40 feet, forming a broad round-topped crown well supplied with glossy light-green foliage. The fruits, borne in loose clusters of 2 or 3 to 20, have been likened to strawberries in appearance. When ripe they are deep pink, becoming dull brown as the fruit dries. The flavor is subacid, suggestive of the Muscat grape. It should be possible to produce lychees commercially in southwestern Florida, where there is relative freedom from frost and where the soils are deep and moist." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 48214.

51466. "No. 401.6."

51469. "No. 409.4."

51467. "No. 402.8."

51470. "No. 410.6."

51468. "No. 408.7."

51471. "No. 421.6."

51472. "No. 455.1. Mountain lychee seedlings for stock."

51464 to 51479—Continued.

51473. *NEPHELIUM LAPPACEUM* L. Sapindaceæ.

Rambutan.

"Rambutan seedlings from Siam."

"The rambutan grows in nearly every garden in Singapore and Penang, and its fruit is one of the most delicious of the region, resembling the lychee in character. The tree becomes 35 or 40 feet high, with compound dark-green leaves, and the fruits, which are produced in clusters of 10 or 12, are oval, about 2 inches long, and covered with soft spines about half an inch long. They are crimson, but sometimes greenish, yellowish, or orange-yellow. The outer covering is easily torn off, exposing the white translucent flesh, which is somewhat acidulous in flavor, suggesting the grape. In climatic requirements the rambutan is strictly tropical." (*Wilson Popenoe.*)

For previous introduction, see S. P. I. No. 47231.

51474. *NEPHELIUM* sp. Sapindaceæ.

"From Cochin China."

51475. *ORYZA SATIVA* L. Poaceæ.

Rice.

"Wild rice from China."

51476 to 51478. *PHYLLOSTACHYS PUBESCENS* Houzeau. Poaceæ.(*P. mitis* A. and C. Rivière.)

Bamboo.

"This is the largest hardy species of bamboo in Japan, growing to a height of 50 feet and producing, not uncommonly, culms over 6 inches in diameter. The culms are gently curved shortly after leaving the ground, and the sheaths are light brown, marked with dark amber-brown blotches and round dots and covered with bristles. This is the great edible bamboo of China and Japan." (*David Fairchild.*)

51476. "No. 901. Edible bamboo from China."

51477. "No. 902. Edible bamboo from China."

51478. "No. 903. Edible bamboo from China."

For previous introduction, see S. P. I. No. 47370.

51479. *SALAKKA* sp. Phœnicaceæ.

"Edible palm from Siam."

51480 to 51482. *COFFEA* spp. Rubiaceæ.

Coffee.

From Mayaguez, Porto Rico. Seeds presented by D. W. May, director, Agricultural Experiment Station. Received October 23, 1920.

51480. *COFFEA ARABICA* L."Seeds of Arabian coffee grown in Porto Rico." (*May.*)51481. *COFFEA LAURENTII* Wildem.(*C. robusta* Hort.)

A white-flowered shrub, native to Belgian Kongo, with oval dark-green leaves up to a foot in length, and shortly elliptic two-seeded fruits. The roundish seeds are sometimes nearly half an inch long. (Adapted from *Notes du Premier Congrès International de Botanique, 1900, p. 234.*)

51482. *COFFEA LIBERICA* Bull.

This species is native to West Africa and forms a taller and stronger plant than *C. arabica*, having also larger leaves and berries. It is said to show greater resistance to disease than *C. arabica*. (Adapted from *Watt, Dictionary of the Economic Products of India, vol. 2, p. 491.*)

For previous introduction, see S. P. I. No. 31976.

51483 to 51544.

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 7, 1920. Numbered October, 1920. Quoted notes by Doctor Shantz.

51483. *ABUTILON* sp. Malvaceæ.

"(No. 1037. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small yellow-flowered bush resembling a hibiscus."

51483 to 51544—Continued.

51484. ACACIA sp. Mimosaceæ.

"(No. 993. Kauro, Nyanza Province, Kenia. June 11, 1920.) A flat-topped acacia with spiral pods; the principal tree of the lower land and drainage courses."

51485. ACACIA sp. Mimosaceæ.

"(No. 1019. Merile, Nyanza Province, Kenia. June 13, 1920.) A flat-topped acacia with spiral pods; abundant in this desert section."

51486. AESCHYNOMENE TELEKII Schweinf. Fabaceæ.

"(No. 1146. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A very small bush with mimosalike foliage, common in this high country. The pods break up into segments of one seed each."

51487. AMARANTHUS CAUDATUS L. Amaranthaceæ. Amaranth.

"(No. 1088. Kagi, between Embu and Fort Hall, Kenia Province, Kenia. June 17, 1920.) An amaranth used like spinach, especially when young."

51488. CENCHRUS sp. Poaceæ. Grass.

"(No. 1022. Uaso Nyiro River, Kenia. June 15, 1920.) A desert grass with a burlike seed; may be valuable for our desert country."

51489. GYNANDROPSIS PENTAPHYLLA (L.) DC. Capparidaceæ.

"(No. 1000. Meru, Kenia Province, Kenia. June 12, 1920.) A white cleomelike plant, abundant at Meru, where it grows on the lawn."

51490. COFFEA sp. Rubiaceæ. Coffee.

"(No. 1135. Kabete, Ukamba Province, Kenia. June 26, 1920.) A few seeds of *Blue Mountain* coffee, the best type grown here."

51491. COMBRETUM sp. Combretaceæ.

"(No. 1034. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) From near the river; a true desert tree."

51492. CORIANDRUM SATIVUM L. Apiaceæ. Coriander.

"(No. 1115. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Coriander seed from the experimental farm at Kibos."

51493. COTONEASTER SIMONSI Baker. Malaceæ.

"(No. 1142. Nairobi, Ukamba Province, Kenia. July 3, 1920.) This plant forms a beautiful hedge."

For previous introduction, see S. P. I. No. 35128.

51494. CROTALARIA sp. Fabaceæ.

"(No. 1035. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small bush in the grassland."

51495. CROTALARIA sp.

"(No. 1043. Uaso Nyiro River, Kenia. June 25, 1920.) A small yellow-flowered form."

51496. DACTYLOCTENIUM AEGYPTIUM (L.) Richter. Poaceæ. Grass.
(*Eleusine aegyptiaca* Desf.)

"(No. 1024. Uaso Nyiro River, Kenia. June 15, 1920.) From Archer's Post (Uaso Nyiro River). Grows near water and also pushes out into the desert."

51497. DOLICHOS LABLAB L. Fabaceæ. Hyacinth bean.

"(No. 1050. Meru, Kenia Province, Kenia. June 16, 1920.) Black beans from the market; grown by the Kikuyu natives."

For previous introduction, see S. P. I. No. 47979.

51498. ELEUSINE CORACANA (L.) Gaertn. Poaceæ. Ragi millet.

"(No. 1123. Nairobi, Ukanba Province, Kenia. June 24, 1920.) Wimbi from the experimental farm at Kibos."

For previous introduction, see S. P. I. No. 48456.

51499. ERAGROSTIS ABYSSINICA (Jacq.) Schrad. Poaceæ. Teff.

"(No. 1128. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Teff from the farm at Kabete."

For previous introduction, see S. P. I. No. 48815.

51483 to 51544—Continued.

- 51500 and 51501. *ERAGROSTIS SUPERBA* Peyr. Poaceæ. Grass.
 51500. "(No. 1030. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A grass with broad compressed spikelets, about 3 feet tall. Abundant in the upper grass zone."
 For previous introduction, see S. P. I. No. 46806.
51501. "(No. 1099. Fort Hall, Kenia Province, Kenia. June 17, 1920.) A grass with very broad spikes. Abundant in places."
51502. *ERIGERON* sp. Asteraceæ.
 "(No. 1152. Kijabe, Ukamba Province, Kenia. July 5, 1920.) An asterlike perennial which is very attractive and should be useful as a border plant. It resembles *Aster ericoides* but is much taller."
51503. *CALLISTEMON CITRINA* (Curtis) Skeels. Myrtaceæ.
 "(No. 1143. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A common ornamental tree with the habit of a conifer. It holds its seed pods for several years."
51504. *GOSSYPIUM* sp. Malvaceæ. Kidney cotton.
 "(No. 1080. En route from Embu to Fort Hall, Kenia Province, Kenia. June 27, 1920.) Seed from a large plant. Cotton is seldom seen in this section."
51505. *GOSSYPIUM* sp. Malvaceæ. Cotton.
 "(No. 1138. Kabete, Ukamba Province, Kenia. June 26, 1920.) *Carraronica* cotton from a perennial plant. The bolls resemble somewhat those of Egyptian cotton."
51506. *HIBISCUS* sp. Malvaceæ.
 Three pods, without notes, included with the shipment from Nairobi.
51507. *HIBISCUS* sp.
 "(No. 1089. Fort Hall, Kenia Province, Kenia. June 17, 1920.) Has most attractive small red or vermilion flowers about half an inch in diameter."
51508. *HIBISCUS* sp.
 "(No. 1131. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Collected near Thika; has large, dark-purple flowers."
51509. *HOLCUS SORGHUM* L. Poaceæ. Sorghum.
 (*Sorghum vulgare* Pers.)
 "(No. 1137. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the farm at Kabete."
51510. *IMPATIENS* sp. Impatiensaceæ.
 "(No. 1168. Kijabe, Ukamba Province, Kenia. July 5, 1920.) Wild along the banks of streams."
51511. *INDIGOFERA* sp. Fabaceæ.
 "(No. 1045. Uaso Nyiro River, Kenia. June 25, 1920.) A tall leguminous plant with very small pods."
51512. *IPOMOEA* sp. Convolvulaceæ. Morning-glory.
 "(No. 1011. Meru, Kenia Province, Kenia. June 15, 1920.) May be an introduced form."
51513. *IPOMOEA HARDWICKII* (Spreng.) Hemsl. Convolvulaceæ. Morning-glory.
 (*I. calycina* Benth.)
 "(No. 1052. Meru, Kenia Province, Kenia. June 16, 1920.) Growing on a fence; may be an introduced form."
51514. *LEPTOCHLOA* sp. Poaceæ. Grass.
 "(No. 957. Moshi, Tanganyika Territory. April 15, 1920.) A grass which looks soft and palatable. It is one of the first of the native grasses to come into flower."
51515. *LINUM USITATISSIMUM* L. Linaceæ. Flax.
 "(No. 1116. Nairobi, Ukamba Province, Kenia. June 24, 1920.) White flax from the experimental farm at Kibos."

51483 to 51544—Continued.

51516. *LUPINUS* sp. Fabaceæ.

Lupine.

"(No. 959. Moshi, Tanganyika Territory. April 15, 1920.) An important element of the vegetation; has a large root."

51517. *MELOTHRIA* sp. Cucurbitaceæ.

"(No. 1039. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small red cucumber, should be similar to No. 436 [S. P. I. No. 49700]."

51518. *MUSA ENSETE* Gmel. Musaceæ.

Banana.

"(No. 985. En route from Muzambi to Meru, Kenia Province, Kenia. May 21, 1920.) The most beautiful plant of the mountain ravines."

For previous introduction, see S. P. I. No. 35236.

51519. *OLEA CHRYSOPHYLLA* Lam. Oleaceæ.

"(No. 1161. Kijabe, Ukamba Province, Kenia. July 5, 1920.) The wild olive of the highlands of East Africa; a rather large tree."

For previous introduction, see S. P. I. No. 42834.

51520 to 51524. *ORYZA SATIVA* L. Poaceæ.

Rice.

51520. "(No. 1111. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *M'bale*, from Labaki."

51521. "(No. 1112. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Kisuke*, from the Charra region."

51522. "(No. 1113. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Abula*, from the Charra region."

51523. "(No. 1121. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station, Kibos."

51524. "(No. 1122. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station, Kibos."

51525. *PANICUM GEMINATUM* Forsk. Poaceæ.

Grass.

"(No. 1020. Uaso Nyiro River, Kenia. June 14, 1920.) A fine river grass."

51526. *PENNISETUM* sp. Poaceæ.

Grass.

"(No. 998. Uaso Nyiro River, Kenia. June 12, 1920.) A plumelike grass very abundant in the desert section, just between the acacia-tall grass and the acacia-short grass region. It is a very promising looking grass."

51527. *PENNISETUM* sp. Poaceæ.

Grass.

"(No. 1041. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A timothylike grass, rather tall and blanchd. An important grass on dark 'cotton' soil."

51528. *PHASEOLUS VULGARIS* L. Fabaceæ.

Common bean.

"(No. 1130. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Red beans grown by the natives in the Meru district and sold in the Nairobi market."

51529. *CLITORIA TERNATEA* L. Fabaceæ.

"(No. 1009. Meru, Kenia Province, Kenia. June 12, 1920.) A small vine with small seeds from the desert near the Uaso Nyiro River."

51530. *PHYSALIS PERUVIANA* L. Solanaceæ.

Poha.

"(No. 1132. Nairobi, Ukamba Province, Kenia. June 25, 1920.) The Cape gooseberry, one of the most valuable plants of East Africa and South Africa for making jam; it has a very tart taste."

For previous introduction, see S. P. I. No. 48181.

51531. *RHUS* sp. Anacardiaceæ.

"(No. 1072. En route from Chuka to Embu, Kenia Province, Kenia. June 16, 1920.) A small tree, very ornamental when heavily loaded with fruits. The fruits are light green, turning red, and resemble chokecherries."

51483 to 51544—Continued.

- 51532 to 51534. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.
51532. "(No. 988. Meru, Kenia Province, Kenia. May 26, 1920.) From the market; used by the Kikuyus to make a red mud paste for hair dressing and for decorating their bodies and clothing."
51533. "(No. 1015. Meru, Kenia Province, Kenia. June 16, 1920.) Castor-beans grown at Meru."
51534. "(No. 1124. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Castor-beans from the experimental farm at Kibos."
51535. *RUBUS* sp. Rosaceæ. Blackberry.
 "(No. 1073. En route from Chuka to Embu, Kenia Province, Kenia. June 16, 1920.) The only blackberry seen in Africa. The fruit is a little reddish, but it appears to be a true wild blackberry, with a fairly good flavor."
51536. *RUBUS* sp. Rosaceæ. Raspberry.
 "(No. 1100. Fort Hall, Kenia Province, Kenia. June 17, 1920.) A red raspberry of fair flavor."
51537. *SENECIO* sp. Asteraceæ.
 "(No. 1154. Kijabe, Ukamba Province, Kenia. July 5, 1920.) A tall yellow-flowered vine with very fleshy leaves; the vine covers low trees."
51538. *SESAMUM ORIENTALE* L. Pedaliaceæ. Sesame.
 "(No. 1117. Nairobi, Ukamba Province, Kenia. June 24, 1920.) *Sim-sim*. From the experimental farm at Kibos."
51539. *SESBAN* sp. Fabaceæ.
 "(No. 1058. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) A long-podded leguminous plant with the pods and petioles armed with stinging hairs. Seeds very small."
51540. *SIDA* sp. Malvaceæ.
 "(No. 1033. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) Beautiful white flowers 1½ inches in diameter. The hibiscus and its allies are the most prominent wild flowers of east-central Africa."
51541. *SOLANUM WRIGHTII* Benth. Solanaceæ.
 "(No. 1141. Nairobi, Ukamba Province, Kenia. July 3, 1920.) This species here forms a fine ornamental tree. One tree planted in 1915 is now 15 feet high, with fine clusters of purple flowers, which are very attractive."
51542. *TELFAIRIA PEDATA* (J. E. Smith) Hook. Cucurbitaceæ.
 "(No. 1133. Nairobi, Ukamba Province, Kenia. June 25, 1920.)" A vigorous climbing vine, native to the coast of Zanzibar, which is said to bear an enormous fruit up to 3 feet in length, always green in color. The fruit is divided into five cells, each filled with a dense, fleshy, very oily pulp. This pulp incloses seeds about an inch in diameter, a quarter of an inch thick, and very rich in oil, with a taste something like that of the butternut. The native name in Zanzibar is *koume*. The female flowers are very small, but the male flowers are about 2 inches long and purplish and are borne in racemes. (Adapted from note by Doctor Shantz and from *Curtis's Botanical Magazine*, pl. 2751.)
 For previous introduction, see S. P. I. No. 45923.
51543. *TRIFOLIUM* sp. Fabaceæ. Clover.
 "(No. 1038. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A *Trifolium* from the Themeda zone below the forest along the stream."
51544. *VERNONIA* sp. Asteraceæ.
 "(No. 1036. En route from Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) A small bush in the grassland below the forest zone."

51545. TRIFOLIUM TEMBENSE Fres. Fabaceæ. **Clover.**

From Kenia. Material collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920.

"(No. 1175. Near Uplands, Kikuyu, Kenia; altitude 7,678 feet. July 9, 1920.) A clover with small heads; forms large patches in very wet soil." (Shantz.)

51546 to 51555.

From Kenia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 7, 1920. Numbered October, 1920. Quoted notes by Doctor Shantz.

51546. (Undetermined.)

"(No. 994. Merile, Nyanza Province, Kenia. June 12, 1920.) One of the principal desert shrubs; about 6 feet high, resembling a buttonbush."

51547. (Undetermined.)

"(No. 1012. Meru, Kenia Province, Kenia. June 15, 1920.) *Myrah* in the Somali language; also called 'Somali food.' A desert shrub 6 to 8 feet high, not spiny, with small leaves. The fruit consists of four orange carpels, each covered with a thin sweet pulp."

51548. (Undetermined.) Fabaceæ.

"(No. 1046. Uaso Nyiro River, Kenia. June 15, 1920.) A leguminous plant with a two-seeded pod."

51549. (Undetermined.) Fabaceæ.

"(No. 1048. Uaso Nyiro River, Kenia. June 15, 1920.) A tall leguminous plant."

51550. (Undetermined.)

"(No. 1059. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) A small upright velvet bean."

51551. *CORDIA HOLSTII* Gurke. Boraginaceæ.

"(No. 1074. Embu, Kenia Province, Kenia. June 17, 1920.) A catalpalike tree very abundant in this high country, where it is the principal park tree. It is of good shape, with broad leaves, and often covered with very delicate white flowers."

51552. (Undetermined.)

"(No. 1144. Nairobi, Ukamba Province, Kenia. July 3, 1920.) A large evergreen tree with trumpet-shaped upright flowers with five alternate stamens and a purple mottled throat. It bears quantities of fruits filled with seeds."

51553. *PENTAS ZANZIBARICA* (Klotzsch) Vatke. Rubiaceæ.

"(No. 1147. Escarpment, Ukamba Province, Kenia. July 4, 1920.) A very handsome Seneciolike vine with very fleshy large waxy leaves and a large cluster of yellow flowers."

51554. *ERLANGEA MARGINATA* (O. and H.) Moore. Asteraceæ.

"(No. 1156. Kijabe, Ukamba Province, Kenia. July 5, 1920.) An especially attractive plant with very large flowers."

51555. (Undetermined.)

"(No. 1167. Kijabe, Ukamba Province, Kenia. July 5, 1920.) Wild along banks of streams."

51556 to 51571.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 1, 1920. Quoted notes by Mr. Popenoe.

51556. *CEREUS HEXAGONUS* (L.) Mill. Cactaceæ. **Cactus.**

"(No. 472. October 8, 1920.) Cuttings of a columnar cactus about 10 feet high, cultivated in a garden at Guaduas, Cundinamarca, at an altitude of about 3,300 feet."

Introduced for the systematic investigations of Dr. J. N. Rose, of the United States National Herbarium.

51556 to 51571—Continued.

51571. *MONNINA PARVIFLORA* H. B. K. Polygalaceæ.

"(No. 484a. October 8, 1920.) Seeds of a small, half-shrubby plant found near the roadside at Zipacon, Cundinamarca, at an altitude of about 8,000 feet. It bears pretty blue flowers which are followed by oval, deep-blue, glossy berries nearly half an inch long."

51572 to 51588.

From Kenia. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920. Quoted notes by Doctor Shantz.

51572. *CAPPARIS* sp. Capparidaceæ.

"(No. 1190. Kisumu, Nyanza Province. July 11, 1920.) A plant called '*sula*' by the natives. The red fruits are eaten by birds."

51573. *CASSIA OCCIDENTALIS* L. Cæsalpiniaceæ.

"(No. 1188. Kisumu, Nyanza Province. July 11, 1920.) A yellow-flowered leguminous plant resembling *Glycyrrhiza* in habit."

A glabrous, ill-smelling weed, up to 3 feet high, with short, closely crowded, axillary racemes of yellow flowers; of wide distribution in the Tropics. The seeds, sometimes called "negro coffee," are used in some parts of the world as a substitute for coffee. (Adapted from *Safford, Useful Plants of Guam, p. 218.*)

For previous introduction, see S. P. I. No. 42830.

51574. *CROTALARIA* sp. Fabaceæ.

"(No. 1185. Kisumu, Nyanza Province. July 11, 1920.) A small hairy podded type."

51575. *CUCUMIS* sp. Cucurbitaceæ.

"(No. 1178. Kikuyu, Ukamba Province. July 9, 1920.) A small melon or gourd which smells delicious but is very bitter. It is of a light greenish lemon color with indistinct greenish stripes and has warts on the surface."

51576. *HIBISCUS* sp. Malvaceæ.

"(No. 1195. Kisumu, Nyanza Province. July 11, 1920.) A hibiscus with yellow flowers 2 inches in diameter."

51577 to 51581. *HOLCUS SORGHUM* L. Poaceæ.

Sorghum

(*Sorghum vulgare* Pers.)

51577. "(No. 1181. Fort Ternan, Nyanza Province. July 10, 1920.) A small type 3 to 5 feet tall."

51578. "(No. 1182. Koru, Nyanza Province. July 10, 1920.) A small type growing along the track."

51579. "(No. 1197. Kisumu, Nyanza Province. July 11, 1920.) Dense, dark wine-colored head and gooseneck."

51580. "(No. 1198. Kisumu, Nyanza Province. July 11, 1920.) An open, red-tan head with very heavy fruits."

51581. "(No. 1199. Kisumu, Nyanza Province. July 11, 1920.) A long white head."

For an illustration of sorghums Nos. 51579 to 51581, see Plate VI.

51582. *LEONOTIS* sp. Menthaceæ.

"(No. 1192. Kisumu, Nyanza Province. July 11, 1920.) A strikingly beautiful plant with orange-colored flowers; abundant in central Africa."

51583. *MEDICAGO HISPIDA DENTICULATA* (Willd.) Urban. Fabaceæ.

Bur clover.

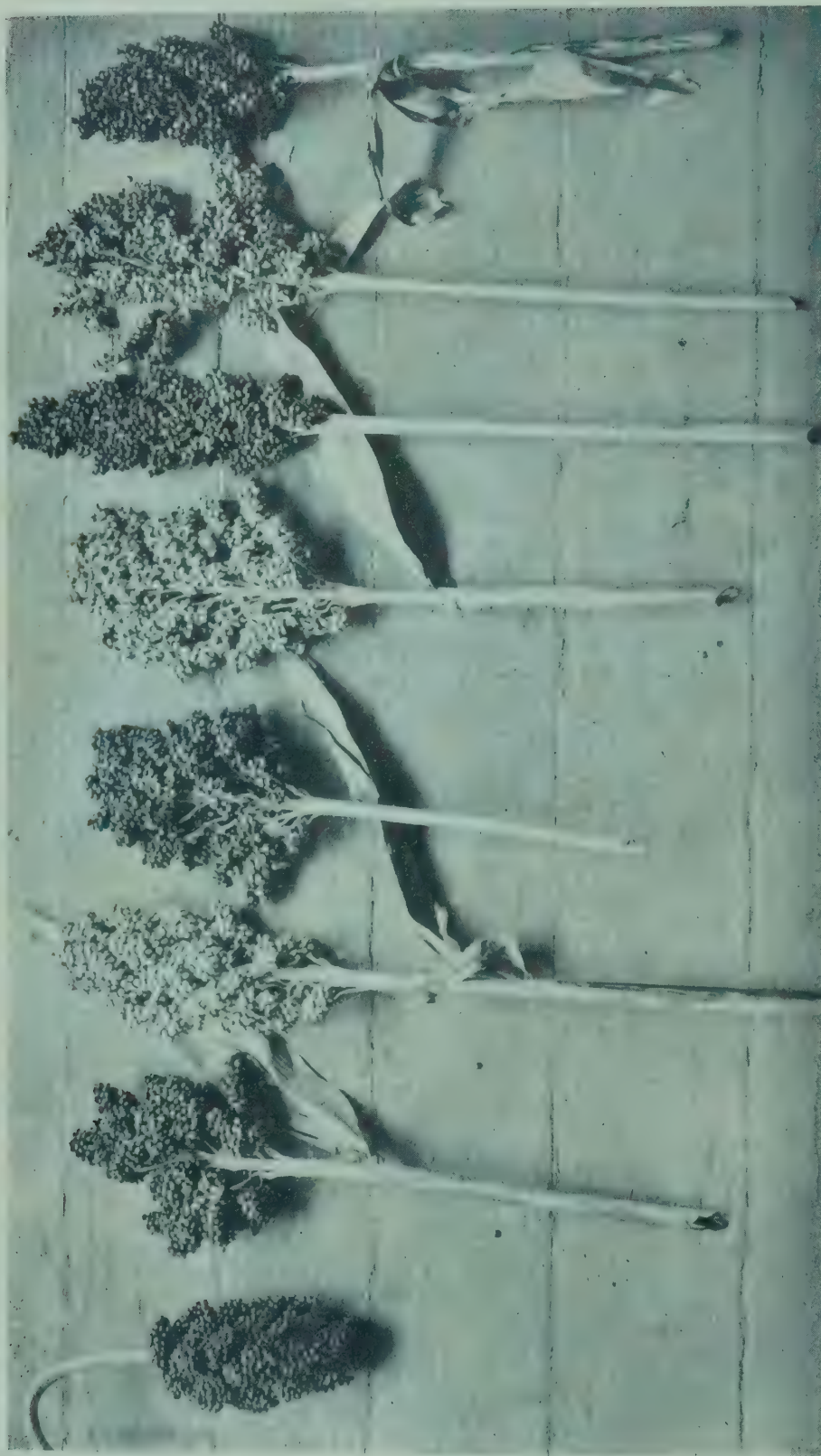
"(No. 1179. Elmenteita, Naivasha Province. July 9, 1920.) A small bur clover which grows on very dry soil."

For previous introduction, see S. P. I. No. 48522.



THE DOUM PALM AT HOME. (HYPHAENE THEBAICA (L.) MART.; S. P. I. NO. 51440.)

The doum palm is one of several closely allied forms that make up the genus *Hyphaene*, which includes the only branching palms known. It thrives in southern Florida and deserves to be widely planted there because of its beauty for landscape-gardening purposes. (Photographed by Dr. H. L. Shantz, Kauro, Kenia Colony, British East Africa, June 26, 1920; P38512FS.)



NATIVE SORGHUMS GROWN BY THE AGRICULTURAL RACES OF KENIA COLONY, BRITISH EAST AFRICA. (HOLCUS SORGHUM L.; S. P. I. NOS. 51579 TO 51581 AND 51953 TO 51957.)

The commercial value to our farmers of the feterita sorghum (No. 51517) introduced from the Sudan in 1906 is said to be \$16,200,000, and the Red Amber and Honey sorghums from the same general region are said to be worth \$2,000,000 a year. One of the principal objects of the expedition of Dr. H. L. Shantz to East Africa was to procure all the varieties possible of these great grain and forage crops which are cultivated by the agricultural races of that region. He obtained many varieties of sorghums, the heads of a few of which are here shown. The goose-necked type at the left is a dark wine-colored head (No. 51579). Following, in order, are a reddish tan head with very heavy grains (No. 51580), a long white semiopen head (No. 51581), a medium red (No. 51953), a spreading white kafirlike type (No. 51954), a reddish tan (No. 51955), a light tan (No. 51956), and a very dark reddish type (No. 51957). (Photographed by Dr. H. L. Shantz, Kisumu, Nyanza Province, Kenia Colony, July 11, 1920; P38713FS.)

51572 to 51588—Continued.

51584. PENNISETUM SCHIMPERI A. Rich. Poaceæ.

Grass.

"(No. 1180. Nakuru, Naivasha Province. July 10, 1920.) A coarse foxtail grass, not especially good. It stands up above the more palatable grasses."

A densely cespitose grass, found mostly in dry places; the stems become more than 4 feet tall. The natives consider this a very good forage for stock in general. The leaves yield a fiber which is used for making very stout cord. (Adapted from *Chiovenda, Etiopia, Osservazione Botaniche*, p. 66.)

51585. SENECIO sp. Asteraceæ.

"(No. 1196. Kisumu, Nyanza Province. July 11, 1920.) An orange-flowered rayless composite."

51586. TECOMA STANS (L.) Juss. Bignoniaceæ.

Yellow tecoma.

"(No. 1183. Kisumu, Nyanza Province. July 11, 1920.) One of the most prominent street trees in East Africa."

A shrub or tree, cultivated in tropical regions for the sake of the terminal panicles of large yellow flowers and the large compound leaves.

For previous introduction, see S. P. I. No. 49873.

51587. OCIMUM SUAVE Willd. Menthaceæ.

"(No. 1193. Kisumu, Nyanza Province. July 11, 1920.) A small, white-flowered mint."

51588. (Undetermined.)

"(No. 1191. Kisumu, Nyanza Province. July 11, 1920.) A small yellow fruit which is very sweet; it may not be edible."

51589 to 51593. SACCHARUM OFFICINARUM L. Poaceæ.

Sugar cane.

From Sydney, New South Wales. Seeds presented by Edw. W. Knox, general manager, Colonial Sugar-Refining Co. Received October 21, 1920. Quoted notes by Mr. Knox.

"Seed collected by our manager of Macknade Mill, Herbert River, Queensland."

51589. "*Badila*. A New Guinea variety of high yield and sweetness, stout growth, and sound constitution."

51590. "*H. Q. 426*. A seedling grown by us in Queensland, of high yield and sweetness, medium thickness, early maturing, medium constitution."

51591. "*1900 seedling*. A Mauritius seedling of high yield and sweetness, medium thickness, early maturing, medium constitution."

51592. "*7 R. 428*. A seedling grown by us in Fiji; high yield, medium quality; suits medium to poor soils."

51593. "*Goru*. A New Guinea variety, of high yield, fair sweetness, and medium constitution."

51594 to 51597.

From British East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 25, 1920. Quoted notes by Doctor Shantz.

51594. HARPACHNE SCHIMPERI Hochst. Poaceæ.

Grass.

(*Eragrostis schimperi* Benth.)

"(No. 1210. Kisumu, Nyanza Province. July 11, 1920.) A small grass, very abundant; characteristic of the desert country."

A stout annual grass, native to Abyssinia, with dense cespitose stems up to a foot high and narrow leaves up to 6 inches in length. The lax, second spikes are from 1 to 3 inches long. (Adapted from *Hooker, Icones Plantarum*, vol. 4, pl. 1371.)

51594 to 51597—Continued.

51595. *MELOTHRIA* sp. Cucurbitaceæ.

“(No. 1215. Port Bell, Buganda Province, Uganda. July 13, 1920.) A small, shiny yellow, cucumberlike plant.”

51596. *THUNBERGIA* sp. Acanthaceæ.

“(No. 1222. Jinja, Eastern Province, Uganda. July 13, 1920.) A trumpet-flower vine with red and orange colored flowers.”

51597. *TRICHOLAENA ROSEA* Nees. Poaceæ.

Natal grass.

“(No. 1218. Kisumu, Nyanza Province, Kenia. July 11, 1920.) Natal grass.”

51598 to 51601. *CYAMOPSIS TETRAGONOLOBA* (L.) Taub. Fabaceæ.*(C. psoraloides DC.)*

Guar.

From the Bombay Presidency, India. Seeds presented by Dr. Bhimbhai M. Desai, Deputy Director of Agriculture, Surat, Gujarat. Received October 27, 1920.

“An East Indian annual legume with long straight stems bearing an enormous number of pods which do not open at maturity. The plant is usually 3 or 4 feet high, and each pod contains about seven pale, angular seeds. In India the plant is grown both for green forage and for the seeds, which are used mainly to fatten cattle, but also as human food. The green pods are also used as a vegetable in the same manner as string beans.

“Guar may be grown in any part of the country where cowpeas succeed and is more drought resistant than any other annual legume. It may be utilized as hay, pasturage, or silage.” (*C. V. Piper.*)

The following varieties of guar:

51598. *Deshi.*51600. *Rozi.*51599. *Pardeshi.*51601. *Sotia.*

“The *Deshi* guar is used for cattle feed only, while the other three varieties are used for green-vegetable purposes.” (*Desai.*)

For previous introduction, see S. P. I. No. 49864.

51602 and 51603. *DATURA METEL FASTUOSA* (L.) Safford. Solanaceæ.

From the island of Guam. Seeds presented by Glen Briggs, agronomist, Agricultural Experiment Station. Received October 29, 1920. Quoted notes by Mr. Briggs.

An ornamental herbaceous annual, common throughout India and the East Indies, varying in height from 2 to 6 feet. It has entire or deeply toothed leaves about 6 inches long and flowers 7 inches or more in length, varying in color from white to lavender or rose. The plant is propagated by cuttings. (*Adapted from The Garden, vol. 46, p. 225.*)

51602. “Double white-flowered variety, very scarce.”

51603. “Double purple-flowered variety.”

For previous introduction, see S. P. I. No. 47671.

51604. *VITEX CUNEATA* Thonn. Verbenaceæ.

From Kaduna, Northern Provinces, Nigeria. Seeds presented by the director, Department of Agriculture. Received November 2, 1920.

“*Ngalibi.* A tree with dark-gray bark and leaves; not unlike though somewhat larger than the horse-chestnut, which it resembles also in the shape of its strong-smelling flowers. Ink is prepared from its bark, and its black fruit is used for food.” (*Schultze, The Sultanate of Bornu, p. 97.*)

51605. *MANGIFERA INDICA* L. Anacardiaceæ.

Mango.

From Port of Spain, Trinidad, British West Indies. Budwood presented by John F. Waby, acting curator, Department of Agriculture. Received November 2, 1920.

“This was grown at the St. Clair Experiment Station, Trinidad.” (*Waby.*)

“*Père Louis.* Size small; form roundish oblong, reniform, swollen at the nak (stigmatic point); nak 2.5 centimeters above the apex; surface greenish

yellow to deep yellow, with a suggestion of red; lenticels small, numerous, brownish; bloom bluish white; skin medium thick; seed large; fiber rather abundant, fine; flesh yellow, tender, and juicy; quality good, moderately vigorous. Monoembryonic. Season, July." (*Wester, Bulletin No. 18, Bureau of Agriculture, Philippine Islands, p. 27.*)

51606. POLAKOWSKIA TACACO Pittier. Cucurbitaceæ.

From San Jose, Costa Rica. Fruits presented by Otón Jimenez, Department of Botany, National Museum. Received November 3, 1920.

A cucurbitaceous plant, the fruit of which is used as a green vegetable. It is a near relative to the chayote, but the fruit is smaller, fusiform, beset with stiff spines at the base, and has a quite different flavor. It is one of the primitive foods of the natives of Costa Rica, where it grows wild in moist, shady places of the temperate region, and its use as a vegetable has readily been adopted by the Spanish Costa Ricans. The fruits, about 2½ inches long and 1½ inches broad, hang from short stems and are picked while still green. After removing the basal spines they are boiled in water, or pickled, or made into preserves. They are also a favorite addition to the native soups. (Adapted from note of Pittier under S. P. I. No. 26244.)

"The kinds which are cultivated contain very little fiber. They are used in many ways, as greens, pickled, as dessert, as a vegetable, etc., and in any one of these ways are very popular with us, and rightly so, I believe. The most common way consists in cooking the entire fruit with the leaves. When cooked, the skin comes off easily, and by pressing with the thumb and finger the seed comes out easily; all that remains, with the exception of a little fiber, is eaten." (*Jimenez.*)

51607 to 51612.

From Salisbury, Rhodesia, Africa. Seeds presented by H. G. Mundy, agriculturist and botanist, Department of Agriculture. Received November 4, 1920. Quoted notes by Mr. Mundy, except as otherwise stated.

51607. CANAVALI ENSIFORME (L.) DC. Fabaceæ. Jack bean.

"Gotani bean."

"The jack bean is a native of the West Indies and the adjacent mainland and is a bushy, semierect annual with coarse stems, thickish leaves, purplish flowers, and hard, white pods, 9 to 14 inches long, each containing 10 to 14 white seeds. Usually the roots are well tubercled, and the plant will withstand much drought. It is remarkably free from insects and fungous diseases. It is valuable as forage and as a cover crop or for green manure." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 49259.

51608. DOLICHOS LABLAB L. Fabaceæ. Hyacinth bean.

"Woodforde's dolichos bean; also known as the *Painted Lady* bean."

For previous introduction, see S. P. I. No. 47978.

51609 to 51611. HOLCUS SORGHUM L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

51609. "Jiba Kafir corn."

51610. "M'bele; native variety of Kafir corn."

51611. "Birdproof Kafir corn."

51612. STIZOLOBIUM NIVEUM (Roxb.) Kuntze. Fabaceæ.

"White stringless velvet bean."

"This has now been cultivated in Florida and other Southern States for several years. It requires about the same length of time to mature as the Florida velvet bean (*Stizolobium deeringianum* Bort) or is perhaps slightly earlier. It is, however, much more prolific in seed production and is therefore likely to come into prominent use. It also has the advantage over the Florida velvet bean in being wholly devoid of stinging hairs." (*C. V. Piper.*)

For previous introduction, see S. P. I. No. 46449.

51613 and 51614.

From Los Angeles, Calif. Seeds presented by Dr. P. D. Barnhart. Received November 4, 1920. Quoted notes by Doctor Barnhart.

51613. *DICENTRA CHRYSANTHA* Walp. Papaveraceæ.

"Our yellow-flowered bleeding heart. It grows at an altitude of 2,500 feet in the Coast Range Mountains."

A glaucous perennial with stiff, coarse, leafy stems 2 to 3 feet high and bipinnate leaves a foot or more in length. The yellow flowers, about half an inch long, are borne in large racemose panicles. In California where it is native, it is sometimes called "golden eardrops." (Adapted from *Jepson, Flora of Western Middle California*, p. 210.)

51614. *MYRCIARIA EDULIS* (Vell.) Skeels. Myrtaceæ.
(*Eugenia edulis* Vell.)

"Of fine flavor, but too seedy to be of commercial value. It is a very prolific bearer and evergreen."

The *cambuca*, a native of the State of Rio de Janeiro, Brazil, is commonly cultivated in that country for its fruit. The tree bears the fruits both on the small limbs and on the trunk. These fruits are oblate, about 1½ inches long, with smooth orange skin, and the flesh is divided into two portions. The firm outer flesh is about a quarter of an inch thick, leathery and very acid, while the inner flesh, which constitutes the edible part of the fruit, is soft, translucent and jellylike, and subacid in flavor. It is highly esteemed by the Brazilians.

For previous introduction, see S. P. I. No. 37829.

51615. RUBUS MACROPHYLLUS Weihe and Nees. Rosaceæ.

From Algiers, Algeria. Seeds presented by Dr. L. Trabut. Received November 5, 1920.

"From St. Martin, Alpes Maritimes, France, at an altitude of about 4,000 feet. The fruit is acid and about seven-eighths of an inch in diameter." (*Trabut.*)

This is a very variable shrub, native to the British Isles. It has arching, very prickly stems, quinate or ternate usually hairy leaves, and panicles of pinkish or white flowers. (Adapted from *Sowerby, English Botany*, vol. 3, p. 177.)

51616. FRAGARIA NILGERRENSIS Schlecht. Rosaceæ. **Strawberry.**

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received November 6, 1920.

This vigorous and hardy strawberry was introduced from China under the direction of Maurice de Vilmorin and is remarkable for its tufted habit, hairy foliage, its small white flowers, and especially for its small, insipid, white hairy fruits. (Adapted from *Journal Société Nationale d'Horticulture*, vol. 21, p. 189.)

51617. RIBES LONGERACEMOSUM Franch. Grossulariaceæ.

From Elstree, Hertfordshire, England. Cuttings presented by Vicary Gibbs, Aldenham House. Received November 10, 1920.

"This species, found in the mountains of western China, bears large black fruits of good flavor, in racemes a foot and a half long." (*Wilson, A Naturalist in Western China*, vol. 2, p. 31.)

For previous introduction, see S. P. I. No. 40458.

Introduced for experiments to determine the resistance of currants to the white-pine blister rust.

51618 to 51622. HOLCUS SORGHUM L. Poaceæ. **Sorghum.**
(*Sorghum vulgare* Pers.)

From Surat, Gujarat, India. Seeds presented by Bhimbhai M. Desai, Deputy Director of Agriculture. Received November 11, 1920.

Sweet sorghums introduced for the Office of Sugar-Plant Investigations.

51618. *Hundi Jowar.*

51621. *Sundhia Jowar.*

51619. *Nilwa Jowar.*

51622. *Utarli Jowar.*

51620. *Red (Ratalio) Jowar.*

51623. PROTEA ARGENTEA L. Proteaceæ.*(Leucadendron argenteum R. Br.)*

From South Africa. Seeds received through the Federal Horticultural Board. Received November 11, 1920.

The *witteboom*, or *silver-leaf pine*, is a beautiful tree found native only in the immediate vicinity of Cape Town, Cape Province, where it grows up to 50 feet in height. The numerous white silky leaves, which are lanceolate and up to 7 inches long, are now an article of commerce, being used for curios, mats, book-marks, etc.; when dry they take ink or paint and are then sold with texts or small scenes depicted on them. (Adapted from *Sim, Forests and Forest Flora of Cape Colony*, p. 294.)

For previous introduction, see S. P. I. No. 41420.

51624. PHLEUM PRATENSE L. Poaceæ.**Timothy.**

From Ayr, Ayrshire, Scotland. Seeds purchased from McGill & Smith (Ltd.). Received November 15, 1920.

"Scotch timothy seed." (*McGill & Smith.*)

Locally grown seed introduced for timothy-breeding investigations.

51625 and 51626.

From Caracas, Venezuela. Seeds presented by Henry Pittier. Received November 16, 1920.

51625. EUGENIA sp. Myrtaceæ.

Sent without notes from Caracas.

51626. MYRCIARIA sp. Myrtaceæ.

"*Guayabo pesjua*. This is a small tree with a spreading, depressed crown. The flowers are small, white, with a four-celled ovary; the fruits are globose, slightly depressed, 2.5 to 4 centimeters long, with dark-purple smooth skin, a white, sweet-acidulate mesocarp, and one to four seeds. It is a great favorite with the natives and often cultivated. In fact, I have seen it only under cultivation, although I am assured it also grows wild around Valencia." (*Pittier.*)

51627 to 51658.

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received September 9, 1920. Quoted notes by Dr. Shantz.

51627. ACACIA sp. Mimosaceæ.

"(No. 1108. Lasamis, Nyanza Province, Kenia. June 13, 1920.) An acacia."

51628. AMOMUM sp. Zinziberaceæ.

"(No. 1003. Near Meru, Kenia Province, Kenia. June 12, 1920.) A plant with beautiful foliage which branches like that of *Alpinia*. The deep reddish purple fruit is partly hidden by the chocolate-colored bracts and is borne in clusters. The fruit, which is quite peppery, is eaten by the natives."

51629. AMOMUM sp. Zinziberaceæ.

"(No. 1004. Near Meru, Kenia Province, Kenia. June 12, 1920.) Similar to the preceding, but the fruits are more clustered, the bracts are not visible, and the fruit is not eaten, so far as I know; the fruits are very ornamental."

51630. ANDROPOGON INSCULPTUS Hochst. Poaceæ.**Grass.**

"(No. 1075. Embu, Kenia Province, Kenia. June 17, 1922.) A grass with a forked head, abundant in this section, especially lower down, toward Fort Hall."

For previous introduction, see S. P. I. No. 32447.

51631. AVENA STERILIS L. Poaceæ.**Oats.**

"(No. 1125. Nairibi, Ukamba Province, Kenia. June 24, 1920.) Black oats from the farm at Kabete."

For previous introduction, see S. P. I. No. 49568.

51627 to 51658—Continued.

51632. *CASSIA DIDYMOBOTRYA* Fres. *Cæsalpiniaceæ*.

"(No. 1010. En route from Meru to Embu, Kenia Province, Kenia June 12, 1920.) A beautiful shrub, abundant in this section and cultivated in Belgian Kongo. It blooms and seeds abundantly."

For previous introduction, see S. P. I. No. 43649.

51633. *CROTALARIA* sp. *Fabaceæ*.

"(No. 1031. En route from the Uaso Nyiro River to Meru, Kenia Province, Kenia. June 15, 1920.) About 6 feet tall, with large pods and yellow flowers."

51634. *CROTALARIA* sp. *Fabaceæ*.

"(No. 1047. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) About 6 feet tall; from the zone below the forest."

51635. *DIGITARIA NODOSA* Parl. *Poaceæ*. Grass

"(No. 1042. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) From the short-grass area."

51636. *ERAGROSTIS* sp. *Poaceæ*. Grass

"(No. 850. Ngano Ngano, Urundi. March 17, 1920.) Abundant as a semiruderal."

51637. *ERYTHRINA* sp. *Fabaceæ*. Grass

"(No. 1064. Chuka, Kenia Province, Kenia. June 16, 1920.) Red bean tree, a prominent wild tree in the forest here; it is wild over much of central Africa and is used as an ornamental in many places."

51638. *GUIZOTIA ABYSSINICA* (L. f.) Cass. *Asteraceæ*.

"(No. 1126. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the farm at Kabete."

An annual, up to 8 feet high, native to Abyssinia. It has narrow opposite leaves, showy yellow flower heads, and black, shiny seeds. It is cultivated in Abyssinia for the oil contained in the seeds. (Adapted from *Chiovenda, Etiopia, Osservazione Botaniche*, p. 27.)

For previous introduction, see S. P. I. No. 44789.

51639. *IPOMOEA* sp. *Convolvulaceæ*. Morning-glory.

"(No. 999. Uaso Nyiro River, Kenia Province, Kenia. June 12, 1920.) A large leafless (at flowering time) Ipomoea with large purple flowers. It makes a very attractive desert shrub."

51640. *MOMORDICA TRIFOLIOLATA* Hook. f. *Cucurbitaceæ*.

"(No. 997. Meru, Kenia Province, Kenia. June 12, 1920.) A cucumberlike fruit with ribbed outer surface; reddish yellow inside, with very red seeds surrounded by edible pulp."

51641. *MOMORDICA SCHIMPERIANA* Naud. *Cucurbitaceæ*.

"(No. 1007. Meru, Kenia Province, Kenia. June 12, 1920.) A cucumber with protuberances on the surface. The seeds are covered with red pulp; eaten by the natives."

51642 to 51644. *ORYZA SATIVA* L. *Poaceæ*. Rice.

51642. "(No. 1110. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Senna*, from Witu."

51643. "(No. 1114. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Variety *Fine*, from the Charra region."

51644. "(No. 1120. Nairobi, Ukamba Province, Kenia. June 24, 1920.) From the experiment station at Kibos."

51645. *PAPPOPHORUM ABYSSINICUM* Hochst. *Poaceæ*. Grass.

"(No. 995. Merile, Nyanza Province, Kenia. June 12, 1920.) Not especially abundant, but occasional in the dry desert country."

An annual cespitose grass with erect stems 2 to 4 feet high and linear leaves. (Adapted from *Flora*, vol. 38, p. 202.)

51646. *PASPALUM DILATATUM* Poir. *Poaceæ*. Grass.

"(No. 1137. Kabete, Ukamba Province, Kenia. June 26, 1920.) One of the most successful introduced plants in this section."

51627 to 51658—Continued.

"This grass has long been introduced in the Southern States, where it is widely distributed. It is a valuable grass for pasturage, particularly on rich land, and not infrequently is cut for hay. It goes very commonly under the name of Dallis grass, but is sometimes called water grass and not infrequently simply *paspalum*. The grass is a native of Argentina, but is now extensively cultivated in Australia, New Zealand, South Africa, and in general throughout the Tropics." (*Piper*.)

For previous introduction, see S. P. I. No. 35068.

51647. *PENNISETUM* sp. Poaceæ. Grass.

"(No. 1001. Uaso Nyiro River, Kenia Province, Kenia. June 12, 1920.) A desert grass which grows just on the desert side of the Themedra grassland."

51648. *PENNISETUM CILIARE* (L.) Link. Poaceæ. Grass.

"(No. 1023. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) A promising grass for desert regions, in which it is quite abundant."

51649. *PHASEOLUS VULGARIS* L. Fabaceæ. Common bean.

"(No. 1129. Nairobi, Ukamba Province, Kenia. June 24, 1920.) The 'rose-coco' bean, produced in four months at the farm at Kabete."

51650. *PHASEOLUS* sp. Fabaceæ.

"(No. 1008. Meru, Kenia Province, Kenia. June 12, 1920.) A small-seeded small vine near the Uaso Nyiro River."

51651. *RICINUS COMMUNIS* L. Euphorbiaceæ. Castor-bean.

"(No. 1119. Nairobi, Ukamba Province, Kenia. June 24, 1920.) Castor-beans from the experimental station at Kibos."

51652. *SPOROBOLUS* sp. Poaceæ. Grass.

"(No. 1025. Uaso Nyiro River, Kenia Province, Kenia. June 15, 1920.) A fine pasture grass."

51653. *VERNONIA* sp. Asteraceæ.

"(No. 1057. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920.) Very ornamental because of its unusually large flowers."

51654. (Undetermined.)

"(No. 1016. Meru, Kenia Province, Kenia. June 16, 1920.) A vine, abundant here, which may be a morning-glory."

51655. (Undetermined.)

"(No. 1017. Lasamis, Nyanza Province, Kenia. June 30, 1920.) A shrub with thick oval leaves and flowers resembling those of the passion flower, with many white stamens. The ripe fruit is reddish or yellowish and filled with seeds. It is eaten in the same manner as chilies and much prized. It has a sharp peppery smell and a sharp pleasant taste and would probably be very useful in making highly seasoned dishes, such as chowchow."

51656. (Undetermined.)

"(No. 1054. En route from Meru to Embu, Kenia Province, Kenia. June 16, 1920. An ampelopsislike vine with a brick-red grapelike single-seeded fruit and rather fleshy leaves. It is common throughout central Africa."

51657. (Undetermined.)

"(No. 1107. Lasamis, Nyanza Province, Kenia. June 13, 1920.) A small evergreen tree found along dry river beds. It looks like a *Buxus* and is called 'wild coffee.'"

51658. *PENTZIA INCANA* (Thunb.) Kuntze. Asteraceæ. Karroo bush.

"(No. 1134. Nairobi, Ukamba Province, Kenia. June 25, 1920.) The *karroo* bush does well here, although the climate is cool and comparatively damp. This indicates that the *karroo* bush might do well in both desert and humid regions."

51659. PLACUS BALSAMIFER (L.) Baill. Asteraceæ.
(*Blumea balsamifera* DC.)

From Kuala Lumpur, Federated Malay States. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 13, 1920.

"A large plant from which the Chinese make camphor; grows here in waste land." (*Rock*.)

For previous introduction, see S. P. I. No. 51036.

51660 to 51667. CAPSICUM ANNUUM L. Solanaceæ. Red pepper.

From Paramaribo, Dutch Guiana. Seeds presented by the director, Department of Agriculture. Received October 15, 1920. Quoted notes by the director.

"Seeds of various varieties of pepper brought to market here."

51660. "*Agi-olina nem.*"

51664. "*Montjie rood.*"

51661. "*Alatta.*"

51665. "*Papegaai.*"

51662. "*Madame Jeannette gell.*"

51666. "*Prasoro or Kateo misie.*"

51663. "*Montjie gell.*"

51667. "*Salm.*"

51668. GYNOCARDIA ODORATA R. Br. Flacourtiaceæ.

From Calcutta, Bengal, India. Seeds purchased from Smith, Stanistreet & Co. (Ltd.), through James A. Smith, American consul general. Received November 1, 1920.

A moderate-sized evergreen tree, native to northwestern India from Sikkim eastward to Rangoon, Burma. It bears round, hard fruits on the stem and main branches; these are used for fish poison. The seeds were long supposed to be the source of chaulmoogra oil; the true source was discovered in 1899 to be *Taraktogenos kurzii*.

For previous introduction, see S. P. I. No. 49636.

51669 to 51695.

From Wageningen, Netherlands. Seeds presented by C. J. Hessing, botanist, Instituut voor Veredeling van Landbouwgewassen. Received November 3, 1920. Quoted notes by Mr. Hessing.

51669 to 51676. PHLEUM PRATENSE L. Poaceæ.

Timothy.

51669. "No. 1. Cultivated timothy, Holland."

51670. "No. 2. Wild timothy growing near Wageningen."

51671. "No. 3. Cultivated timothy, Holland."

51672. "No. 4. High-growing timothy, own culture."

51673. "No. 5. A geniculate variety from Holland."

51674. "No. 6. Wild, growing near Alkmaar."

51675. "No. 7. Wild, growing in light clay near Zutphen."

51676. "No. 8. Wild, from Switzerland."

51677 to 51682. SECALE CEREALE L. Poaceæ.

Rye.

51677. "No. 8. *Petkusser* × *Krüger*."

51678. "No. 9. *Krüger*."

51679. "No. 10. From Zealand Island, Denmark."

51680. "No. 11. *Buhlendorfer*."

51681. "No. 12. *Klooster*."

51682. "No. 13. *Petkusser*."

51683 to 51695. TRITICUM AESTIVUM L. Poaceæ.
(*T. vulgare* Vill.)

Common wheat.

51683. "No. 1. *Millioen III B.*"

51684. "No. 2. *Imperial*."

51685. "No. 3. *Concurrent*."

51686. "No. 4. *Matador*."

51687. "No. 5. *Essex*."

51669 to 51695—Continued.

51688. "No. 6. *Geldersche Ris.*"
 51689. "No. 7. From Zealand Island, Denmark."
 51690. "No. 14. *Imperial II D.*"
 51691. "No. 15. *Millioen II.*"
 51692. "No. 16. *Batauwe.*"
 51693. "No. 17. *Millioen IV.*"
 51694. "No. 18. *Squarehead.*"
 51695. "No. 19. *Wilhelmina.*"

51696. *CYAMOPSIS TETRAGONOLOBA* (L.) Taub. Fabaceæ. **Guar.**
 (*C. psoraloides* DC.)

From St. Thomas Mount, Madras, India. Seeds presented by G. A. D. Stuart, Director of Agriculture. Received November 16, 1920.

An erect East Indian annual, 3 to 6 feet high, bearing an enormous number of pods which are used as a vegetable like string beans. The plant can be grown for forage, hay, and silage in any part of the country where the cowpea succeeds, and is more drought resistant than any other annual legume.

For previous introduction, see S. P. I. No. 49902.

51697. *SOLANUM* sp. Solanaceæ. **Wild potato.**

From Bogota, Colombia. Tubers presented by Hermano Apolinar-Maria, Institute de la Salle. Received November 16, 1920.

"Tubers of a wild potato from the Páramos de Quasca, growing at an altitude of 3,100 meters." (*Apolinar-Maria.*)

51698. *PISTACIA LENTISCUS* L. Anacardiaceæ.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received November 16, 1920.

"A very ornamental bush or small tree which will grow in the very driest positions—for instance, in a fissure of a vertical rock. The wood of this plant is very strong and can be used for making excellent handles for pickaxes and such tools which have to resist heavy wear." (*Proschowsky.*)

A small tree which is found along the coast of the Mediterranean Sea, where it forms a bushy thicket. The evergreen, pinnate, shining leaves exhale a strong aromatic odor when bruised. The tree is particularly ornamental when in flower; the pistillate flowers are purplish green, and the bright purple, very small staminate flowers are clustered in the axils of the leaves. The fruits are the size of lentils and are black when ripe. They are eaten by the natives. The fruits contain an edible, green oil, which is preferred by the Turks to olive oil. In Tunis this oil is largely used for lighting. (Adapted from *Bulletin Société Horticole Tunisie*, vol. 14, p. 69.)

For previous introduction, see S. P. I. No. 9426.

51699. *ANACARDIUM OCCIDENTALE* L. Anacardiaceæ. **Cashew.**

From Guayaquil, Ecuador. Seeds presented by Dr. Frederic N. Goding, American consul general. Received November 18, 1920.

"Seeds of the *marañon*, which grows wild in the coastal region of this country. The pear-shaped fruit is about 3 inches long; one variety is bright shining yellow, the other bright shining red. The taste is mildly acid and rather pleasant." (*Goding.*)

51700. *PARTHENIUM ARGENTATUM* A. Gray. Asteraceæ. **Guayule.**

From Marfa, Tex. Plants presented by R. A. Epperson. Received November 18, 1920.

The guayule is a spreading, much-branched shrub, rarely as much as 3 feet in height, with small greenish, silvery gray leaves and a profusion of small yellow flowers borne in loose clusters on slender stems. The shrub is

native to a comparatively small area in southwestern Texas and northern Mexico.

Unlike most other rubber-producing plants, the bark of the guayule contains no latex, the rubber being in the cellular tissue of the epidermis and to certain extent in the branches and leaves. The dried plants are ground, and the rubber is extracted by one of several chemical processes. Although guayule rubber is not of the highest grade, it has a possible future, because the plant will grow in semiarid regions, it does not suffer from light frosts after passing the seedling stage, and the plants may be gathered throughout the year. (Adapted from *Commerce Reports No. 149, June 26, 1918.*)

For previous introduction, see S. P. I. No. 47955.

51701. PHASEOLUS VULGARIS L. Fabaceæ. Common bean

From Santa Ines, Chile. Seeds presented by A. Fernandez, through Salvador Izquierdo. Received November 22, 1920.

Chilean bean.

For previous introduction, see S. P. I. No. 51198.

51702. PYRUS MALIFOLIA Spach. Malaceæ. Pear

From Paris, France. Cuttings presented by Prof. D. Bois, Museum d'Histoire Naturelle. Received November 23, 1920.

A handsome tree which is a hybrid of doubtful origin, possibly a seedling from *P. auricularis*; the original specimen, 30 feet high, grew in Paris. The leaves are roundish oval, nearly always cordate at the base, and the flowers are 1 to 1½ inches across. The fruit is broadly turbinate, about 2 inches long and deep yellow when ripe.

For previous introduction, see S. P. I. No. 44048.

51703. ASIMINA TRILOBA (L.) Dunal. Annonaceæ. Papaw.

From McConnelsville, Ohio. Budwood presented by H. D. Tennent. Received November 26, 1920.

"The largest late sort of which I know and the mildest in flavor when in best condition." (*Tennent.*)

"Fruit large and of excellent quality." (*David Fairchild.*)

51704. CHAYOTA EDULIS Jacq. Cucurbitaceæ. Chayote.
(*Sechium edule* Swartz.)

From Antigua, Guatemala. Fruits presented by W. Cameron Townsend, through Herndon W. Goforth, American vice consul, city of Guatemala. Received November 29, 1920.

"*Guisquil de papa.* The very best variety which has yet come under the range of my observations is the *guisquil de papa* (potato chayote) of Antigua. This is a broadly obovoid fruit about 4 inches in length, plump, perfectly smooth on the surface (though with brownish cracks when fully ripe), and of a dull ivory-white color. This variety is unusually mealy and is of much better flavor than most others. It is, to my mind, the one which should be disseminated most widely in the United States." (*Wilson Popenoe.*)

51705. AMYGDALUS COMMUNIS × PERSICA. Amygdalaceæ. Peach-almond hybrid.

From Morgan Hill, Calif. Seeds presented by Leonard Coates. Received December 6, 1920.

"A peach-almond hybrid which, Mr. Coates says, bears fruits looking in their early stages like green peaches, but in early September the flesh begins to split open and expose the almondlike pit. He has tried this as a stock and finds that it produces the branching roots of a peach but is more vigorous than any other stock. He guarantees that these seeds will make double the growth of the ordinary peach seeds in the nursery row. This hybrid was procured by Mr. Coates from a man living near Los Gatos." (*David Fairchild.*)

51706. RUBUS MACROCARPUS Benth. Rosaceæ. Colombian berry.

From Bogota, Colombia. Plants collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 16, 1920.

"(No. 495. Bogota, Colombia. October 14, 1920. Herb. No. 1108.) The giant Colombian blackberry, from El Penon, near Sibate, Cundinamarca, Colombia."

For previous description, see S. P. I. No. 51401.

51707 to 51739.

From Buitenzorg, Java. Seeds presented by the director, Plant-Breeding Station. Received October 26, 1920.

51707. BENTINCKIA NICOBARICA (Kurz) Beccari. Phœnicaceæ. Palm.

An elegant little palm with a habit resembling that of a *Kentia*; its native home is the Nicobar Islands, Indian Ocean. The pinnate, irregularly divided fronds are large and spreading, and the branched spadix bears small purplish berries. (Adapted from *Revue Horticole*, vol. 68, p. 249.)

For previous introduction, see S. P. I. No. 7569.

51708. CALAMUS SCIPIONUM Lour. Phœnicaceæ. Rattan palm.
(*Daemonorops fissus* Blume.)

The typical form of this rattan is 40 to 60 feet in height, with alternate, pinnatisect leaves 4 or 5 feet long; the male spadix is 20 feet long and the female 10 feet, and the small ovoid fruits are about one-third of an inch in diameter. This rattan is native to Malaysia, where the canes are employed for making furniture, etc., for which purpose it is especially suitable because of the ease with which it splits. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 89; and *Hooker, Flora of British India*, vol. 6, p. 461.)

51709. CARYOTA MITIS Lour. Phœnicaceæ. Palm.

A Malayan palm about 20 feet high with a straight cylindrical trunk 4 inches or more in diameter and bipinnate leaves 4 to 9 feet in length. The palm is also found in the island of Reunion, where the natives extract a fiber from it and also utilize the wool found in the axils of the leaves as a textile. (Adapted from *Grisard and Vanden-Berghe, Les Palmiers Utiles*, p. 43.)

For previous introduction, see S. P. I. No. 51128.

51710. CARYOTA RUMPHIANA Mart. Phœnicaceæ. Palm.

An East Indian palm about the size of the coconut palm, with a smooth trunk and graceful bipinnate leaves composed of segments with truncate jagged tips. From the central pith of the bark a sago is prepared which is eaten in times of scarcity. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 106.)

51711. CHRYSALIDOCARPUS LUCUBENSIS Beccari. Phœnicaceæ. Palm.

A rather tall palm from the island of Nossi Be, Madagascar, with elongate pinnate fronds composed of rigid swordlike segments up to 3 feet in length. The obovate fruits are about half an inch long. (Adapted from *Engler, Botanische Jahrbücher*, vol. 38, *Beiblatt* 87, p. 35.)

51712. DAEMONOROPS TRICHOUS Miquel. Phœnicaceæ. Palm.

A rattan from the island of Billiton, East Indies, where it inhabits both the lowlands and the highlands. The stems are about an inch thick, indented at the nodes, with internodes up to 8 inches in length. The upper surface of the stem is gray, and the stems are very hard to split. It is known as "rotan nanga" by the natives; so far as is known it is not used. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 99.)

51713. DAMMARA ALBA Rumph. Pinaceæ.
(*Agathis loranthifolia* Salisb.)

A handsome tree growing to 100 feet in height, with a trunk 8 feet in diameter, straight and branchless for two-thirds its length. It is of great commercial importance on account of its yield of the transparent dammar

51707 to 51739—Continued.

resin, extensively used for varnish. It is a native of the East Indian Archipelago and mainland. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 161.)

For previous introduction, see S. P. I. No. 51129.

51714. *DRYMOPHLOEUS AMBIGUUS* Beccari. Phœnicaceæ. Palm.

A small spineless palm, less than 8 feet high, native to New Guinea, with pinnate fronds about $4\frac{1}{2}$ feet long and fleshy ovoid fruits nearly an inch in length. (Adapted from *Beccari, Malesia*, vol. 1, p. 42.)

51715. *DRYMOPHLOEUS PROPINQUUS* Beccari. Phœnicaceæ. Palm.

A rather small palm, native to New Guinea, with a stem up to $2\frac{1}{2}$ meters high and 2 centimeters thick. The leaves, about $1\frac{1}{2}$ meters long, are irregularly pinnate, with pinnae about 30 centimeters long. (Adapted from *Beccari, Malesia*, vol. 1, p. 43.)

For previous introduction, see S. P. I. No. 49532.

51716. *DRYMOPHLOEUS* sp. Phœnicaceæ. Palm.

Received as *Actinophloeus macarthurii*, for which a place of publication has not yet been found. The species of *Actinophloeus* are now generally referred to *Drymophloeus*.

51717. *DRYMOPHLOEUS* sp. Phœnicaceæ. Palm.

Received as *Actinophloeus sanderiana*, for which a place of publication has not yet been found. The species of *Actinophloeus* are now generally referred to *Drymophloeus*.

51718. *ELAEIS GUINEENSIS* Jacq. Phœnicaceæ. Oil palm.

The oil palm is native to the western coast of Africa, but has become distributed throughout the Tropics. The palm becomes 16 to 20 meters in height and bears fruits of the size and form of a plum, yellow or brownish at maturity, according to the variety.

These fruits, a thousand or more of which are borne upon one raceme, have a hard, woody endocarp surrounded by a fibrous, fleshy pulp, which contains a large percentage of oil. The seed contains an oleaginous kernel which is exported to Europe under the name *palmiste*, or palm-nut oil. The orange-colored oil from the pulp is known simply as palm oil, and this is seen in Europe only in the solid state and is used in making soap. The other oil, which is white, is used in making very fine soaps. (Adapted from *Capus and Bois, Les Produits Coloniaux*, p. 294.)

For previous introduction, see S. P. I. No. 48633.

51719. *EUTERPE ACUMINATA* (Willd.) Wendl. Phœnicaceæ. Palm.
(*Oenocarpus utilis* Klotzch.)

A graceful spineless palm from tropical South America, with a trunk 36 feet tall, terminated by about 10 pinnate fronds 7 or 8 feet long. The black, roundish fruits are fleshy and about half an inch in diameter. (Adapted from *Linnaea*, vol. 20, p. 447.)

51720. *LATANIA COMMERSONII* Gmel. Phœnicaceæ. Palm.

A palm from the island of Mauritius which reaches a height of 30 to 40 feet, with lightly spiny, fan-shaped leaves marked with red in young trees. The leaves are used by the natives in making fans, hats, mats, etc. (Adapted from *Grisard and Vanden-Berghe, Les Palmiers Utiles*, p. 103.)

For previous introduction, see S. P. I. No. 45960.

51721. *LATANIA LODDIGESII* Mart. Phœnicaceæ. Palm.

A very robust palm, native to Mauritius, up to 50 feet in height. The hairy leafstalks are 3 to 4 feet long, and the blades of the whitish fan-shaped leaves are 3 to 5 feet in length. This species is cultivated throughout the Tropics and when young makes a very decorative pot plant. (Adapted from *Rock, Ornamental Plants of Hawaii*, p. 33.)

51722. *LATANIA VERSCHAFFELTII* Lem. Phœnicaceæ. Palm.

A palm 40 feet in height with densely tomentose petioles 5 to 8 feet long, spiny on the young plants. The pale-green leaves are about 5 feet in diameter, with divisions $2\frac{1}{2}$ feet long and 2 inches wide. This palm grows abundantly on the island of Rodriguez, east of Mauritius. (Adapted from *Gardeners' Chronicle*, third series, vol. 31, p. 140.)

51707 to 51739—Continued.

51723. LICUALA RUMPHII Blume. Phœnicaceæ.

Palm.

A rather showy dwarf fan palm grown for its peculiar habit and handsome foliage. The slender stem bears a crown of long-petioled roundish leaves, 3 feet or more in diameter, with 12 to 15 segments. The simply branched spadix, 4 or 5 feet long, bears the small ellipsoid fruits. Native to Celebes and Borneo. (Adapted from *Blume, Rumphia*, vol. 2, p. 41.)

51724. MARTINEZIA EROSA Linden. Phœnicaceæ.

Palm.

A rather small South American palm, covered throughout with long needlelike spines. The pinnate leaves consist of a few pairs of narrowish leaflets at the base with a pair of broader ones at the apex, which is truncate and ragged. (Adapted from *Gardeners' Chronicle*, 1872, p. 1296.)

51725. NENGA SCHEFFERIANA Beccari. Phœnicaceæ.

Palm.

A graceful spineless rather small Malayan palm with long-stemmed pinnate leaves and ellipsoid fruits about an inch in length. (Adapted from *Annales, Jardin Botanique de Buitenzorg*, vol. 2, p. 84.)

51726. ONCOSPERMA FILAMENTOSUM Blume. Phœnicaceæ.

Palm.

An elegant palm with a trunk 30 to 40 feet high, distinctly annulate and armed, and with a thick, graceful crown. The pinnate leaves are 10 to 12 feet long, with pinnae about a foot in length. This palm is common on the borders of the paddy swamps in the Malay Peninsula. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 464.)

For previous introduction, see S. P. I. No. 49548.

51727. PANDANUS ATROCARPUS Griffith. Pandanaceæ.

Screw pine.

A tree 40 to 60 feet high and about 6 inches in diameter, with linear acuminate dark-green leaves 20 feet long and 4 inches wide. The fragrant white spikes are 4 to 6 inches long and the fruits an inch long. The leaves are used for making coverings for carts, for screens, hats, etc. (Adapted from *Ridley, Materials for a Flora of the Malayan Peninsula*, pt. 2, p. 230.)

51728. PANDANUS FURCATUS Roxb. Pandanaceæ.

Screw pine.

One of the most ornamental of the screw pines, attaining a height of about 5 meters, with dark-green, linear, spiny leaves, 3 or 4 or more meters long, gracefully arching and somewhat spirally arranged. The whitish gray inflorescence emits a very agreeable odor. Native to the East Indies. (Adapted from *Revue Horticole*, vol. 51, p. 290.)

For previous introduction, see S. P. I. No. 39652.

51729. PANDANUS LABYRINTHICUS Kurz. Pandanaceæ.

Screw pine.

A shrub 15 to 20 feet high, with erect-spreading branches, and a slender, warty trunk which sends out stiltlike, intricate aerial roots. The somewhat leathery linear leaves, 4 to 6 feet long, are shining above, with the margins and midribs densely spiny with curving white spines. The drupes are shining olive green, becoming golden. Native to the East Indies. (Adapted from *Miquel, Annales Musci Botanici Lugduno-Batavi*, vol. 2, p. 53.)

51730. PANDANUS POLYCEPHALUS Lam. Pandanaceæ.

Screw pine.

An East Indian screw pine with leaves about 3 feet long and 2 inches wide. The natives eat the young snow-white leaves, which are tender and sweet, and also the unopened flower heads. (Adapted from *Heyne, Nuttige Planten van Nederlandsch-Indië*, vol. 1, p. 29.)

51731. PANDANUS TECTORIUS Patkins. Pandanaceæ.

Screw pine.

A small tree with a trunk which usually begins to branch very low, the branches bending nearly to the ground; the leaves are long, sword-shaped, armed with spines on the margins and keel, and of great textile strength. The tree is native to Oceanica and was introduced into Guam probably at a very early date. In the latter place the natives plant this species in hedges, where it serves the double purpose of a fence and a source of material for cordage, mats, hats, and bags. (Adapted from *Safford, Useful Plants of Guam*, p. 344.)

For previous introduction, see S. P. I. No. 51138.

51707 to 51739—Continued.

51732. *PANDANUS VANDERMEESCHII* Balf. f. Pandanaceæ. Screw pine.

This screw pine is from the island of Mauritius and becomes 15 feet or more in height, with two side branches extending to about 8 feet from the main trunk. The stiff suberect leaves are 2 or 3 feet long, with strong, red spines. The triangular-round fruits are borne on the side branches and are about 9 inches long. (Adapted from *Gardeners' Chronicle, third series, vol. 18, p. 237.*)

For previous introduction, see S. P. I. No. 9726.

51733 and 51734. *PHOENIX RECLINATA* Jacq. Phœnicaceæ. Palm.

A bushy or arborescent palm found native in the coastal districts of South Africa, where it sometimes becomes as much as 40 feet in height. The reclinate pinnate leaves are 6 to 9 feet long, with 30 to 50 pairs of leaflets. The elongate berries, about half an inch long, are yellowish when ripe, with a sweetish pulp. (Adapted from *Marloth, Flora of South Africa, vol. 4, p. 49.*)

51733. A form with large seeds, over an inch long.

51734. A form with seeds only half an inch long.

For previous introduction, see S. P. I. No. 23424.

51735. *PINANGA KUHLLI* Blume. Phœnicaceæ. Palm.

A stout, rapid-growing palm, native to the lower altitudes of western Java, becoming 16 to 25 feet high, with annulate stems 2 inches in diameter, reddish when young, and beautiful terminal fronds with pinnate blades 4 feet long and half as wide. This is one of the hardiest species of *Pinanga* known. (Adapted from *Gardeners' Chronicle, third series, vol. 31, p. 97.*)

For previous introduction, see S. P. I. No. 49554.

51736. *PTYCHANDRA GLAUCA* Scheff. Phœnicaceæ. Palm.

A rather small East Indian palm with a slender trunk and very graceful pinnate fronds up to 12 feet in length; the longest pinnæ are 2½ feet. The spadix, borne at right angles to the trunk, is 3 feet long, with a reddish covering at the base, and the fruits are round and reddish. (Adapted from *Annales du Jardin Botanique de Buitenzorg, vol. 1, p. 160.*)

51737. *RHOPALBLASTE HEXANDRA* Scheff. Phœnicaceæ. Palm.

A slender East Indian palm of medium height, with somewhat drooping pinnate fronds 3 or 4 feet long, composed of a large number of lanceolate pinnæ diminishing in size toward the summit and base of the frond. (Adapted from *Annales du Jardin Botanique de Buitenzorg, vol. 1, p. 156.*)

51738. *SEAFORTHIA ELEGANS* R. Br. Phœnicaceæ. Palm.

An elegant palm, native to the southern coast of Australia and the neighboring islands. It becomes 30 feet in height, with dark-green pinnate fronds up to 15 feet in length, and bears small oval berries which are fibrous in texture. (Adapted from *Flore des Serres, vol. 20, p. 93.*)

For previous introduction, see S. P. I. No. 38540.

51739. *TILMIA CARYOTAÆFOLIA* (H. B. K.) O. F. Cook. Phœnicaceæ.
(*Martinezia caryotaefolia* H. B. K.) Palm.

A small but graceful palm, native to tropical South America, becoming 30 feet in height. The erect stem is slightly swollen at the base and is clearly ringed; these rings are armed with stiff black slender spines 2 or 3 inches long. The bright-green terminal pinnate fronds are 4 to 5 feet long, spreading, and drooping. (Adapted from *Curtis's Botanical Magazine, pl. 6854.*)

For previous introduction, see S. P. I. No. 25944.

51740. *ARONIA ARBUTIFOLIA* (L.) Pers. Malaceæ.
(*Pyrus arbutifolia* L. f.)

From Atlanta, Ga. Seeds purchased from Otto Katzenstein & Co. Received December 18, 1920.

Native North American shrub, very showy in late fall and winter, with its brilliant red fruits and scarlet leaves. Grows wild from New York to Ohio, Arkansas, and Florida.

For previous introduction, see S. P. I. No. 44379.

51741. ZIZIPHUS SPINA-CHRISTI (L.) Willd. Rhamnaceæ.

From Haifa, Syria. Seeds presented by Amram Khazanoff, Jewish Colonization Association. Received November 11, 1920.

"Fruit of *Ziziphus spina-christi*, locally known as *sidr*, which you may find worth while experimenting with as a stock for the jujube." (*Khazanoff*.)

For previous introduction, see S. P. I. No. 44361.

51742. ACROCOMIA SCLEROCARPA Mart. Phœnicaceæ.

Macauba palm.

From Lavras, Minas Geraes, Brazil. Seeds presented by Escola Agrícola. Received November 15, 1920.

The *gru gru*, an exceedingly handsome palm, native to Trinidad and very common there. It is tall growing, with a single stem about 1 foot in diameter, ventricose, with long black spines all over the stem, and a handsome head of very fine foliage; the leaves, 9 to 12 feet long, are gracefully drooping. The abundant round fruits are yellowish brown and 2 inches in diameter. The pulp of the fruits and kernels of the seeds are edible, and a valuable oil is obtained from the latter. Handsome walking sticks are made from the stems. (Adapted from the *Journal of the Board of Agriculture of British Guiana*, vol. 12, p. 271.)

For previous introduction, see S. P. I. No. 37382.

51743. PRUNUS BOKHARIENSIS Royle. Amygdalaceæ. Plum.

From Shahjahanpur, United Provinces, India. Seeds presented by N. L. Rockey, district superintendent. Received November 20, 1920.

"Plum seed which I hope may be of some use, although I suppose that California plums may have been derived from them. I do not know whether these would make prunes or not. They are certainly sweet enough." (*Rockey*.)

For previous introduction, see S. P. I. No. 43988.

51744 to 51747. ACONITUM spp. Ranunculaceæ. Monkshood.

From Edinburgh, Scotland. Seeds presented by Dr. Isaac Bayley Balfour, director, Royal Botanic Garden. Received November 23, 1920.

51744. ACONITUM FEROX Wall.

A plant with an erect stem 3 to 6 feet high, rounded, palmately trifid leaves cut into irregularly indented lobes. The large pale-blue flowers are in a terminal dense-flowered raceme. The mass of the root sold by Indian druggists as aconite is derived from this species. The active principle in the root is an alkaloid, pseudoaconitine. It is used as a narcotic sedative, as an external application for neuralgia, etc., and internally chiefly in the treatment of chronic intermittent fevers. (Adapted from *Watt, Dictionary of the Economic Plants of India*, vol. 1, p. 87, and *National Standard Dispensatory*, p. 98.)

For previous introduction, see S. P. I. No. 38993.

51745. ACONITUM FISCHERI Reichenb.

As a garden plant this is at once one of the best, and well worth growing in any collection of hardy plants. The growth reaches 4 to 6 feet, terminated by a fine panicle of large, showy pale-blue flowers. It is an autumn-flowering species from Siberia and Kamchatka.

Medicinally, this plant is known as Japanese aconite and is imported quite largely into Europe, frequently finding its way to the United States. The Japanese aconite contains as its active constituent an alkaloid called japaconitine, which is now generally believed to be identical with aconitine (the alkaloid in *A. napellus*). (Adapted from *Flora and Sylva*, vol. 1, and *National Standard Dispensatory*, pp. 98 and 101.)

51746. ACONITUM SEPTENTRIONALE Koelle.

A plant native to the Himalayas from Chitral to Kumaon, mostly in forests, locally abundant at altitudes of 5,000 to 12,000 feet in Kashmir. The root is perennial, elongate; the stem erect, 3 to 6 feet high, much branched. The flowers are pale yellow or dull purple, with a short-beaked

51744 to 51747—Continued.

helmet which has a long cylindrical dorsal prominence. This species also yields much of the aconite of European commerce. (Adapted from *Kirtikar, Indian Medicinal Plants, vol. 1, p. 10.*)

51747. ACONITUM VARIEGATUM L.

A large plant reaching 1.5 meters in height, found in certain humid forests of the Swiss Alps, and bearing from July to September beautiful blue flowers often streaked with white. The upper sepal is the shape of a helmet and at least twice as tall as wide. At the base of each flower stalk the plant usually bears two or three adventitious roots swollen into tubercles. The tubers are smaller than those of *A. napellus* (the official variety of aconite), but closely resemble small specimens of it. (Adapted from *Bonnier, Flore Complète Illustrée en Couleurs de France, Suisse, et Belgique, vol. 1, p. 39.*)

51748 to 51750.

From Ness, Neston, England. Seeds presented by A. K. Bulley. Received November 24, 1920.

51748. ANDROSACE COCCINEA Franch. Primulaceæ.

"The scarlet androsace. Not hardy, will need a greenhouse in winter; dies after flowering, but makes good seed if it is allowed to flower in the open." (*Bulley.*)

51749. GENTIANA sp. Gentianaceæ.**Gentian.**

Received as *Gentiana farreri*, for which a place of publication has not yet been found.

51750. MECONOPSIS PSEUDOINTEGRIFOLIA Prain. Papaveraceæ.

A biennial with huge flowers of a delightful citron color touched with green. It differs from *M. integrifolia* in having the flowers on a common stalk.

51751. FICUS CARICA L. Moraceæ.**Fig.**

From Austin, Tex. Plants presented by F. T. Ramsey. Received November 26, 1920.

"The *Ramsey* fig. This has proved to be the best we have ever seen. One cutting bore 81 figs seven months after planting. Every cutting planted in March will bear figs by fall." (*Ramsey.*)

51752. MALUS GLAUDESCENS Rehder. Malaceæ. Wild crab apple.
(*Pyrus glaucescens* Bailey.)

From Rochester, N. Y. Trees presented by John Dunbar, Department of Parks. Received November 30, 1920.

"Seedlings of *M. glaucescens*, perhaps 4 years old, which have large deep roots. They will, I think, suit your purpose for stock plants. When in bloom it is a beautiful ornamental plant." (*Dunbar.*)

For previous introduction, see S. P. I. 49036.

51753 to 51758.

From Richmond, Victoria, Australia. Seeds presented by F. H. Baker, through Harlan P. Kelsey, Salem, Mass. Received December 7, 1920.

51753 and 51754. CALLITRIS CUPRESSIFORMIS Vent. Pinaceæ.

51753. Received as a "variety of Murray pine" without further description.

An elegant, moderate-sized cypresslike tree, native to Australia, introduced and acclimatized at Hakgala Gardens, Ceylon, where it bears seeds freely. Very ornamental for lawns, etc., and good for timber, fuel, etc. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting, pp. 400 and 454.*)

For previous introduction, see S. P. I. No. 51282.

51754. Received simply as "Murray pine," apparently the typical form.

51753 to 51758—Continued.

51755. *CANDOLLEA GRAMINIFOLIA* (Swartz) F. Muell. *Candolleaceæ.*
(*Stylidium graminifolium* Swartz.)

"Trigger plant." (*Baker.*)

An interesting tufted plant with scapes of large, beautiful rose-lilac flowers and beautiful narrow swordlike leaves, very glabrous, 5 to 8 inches long, the outermost gracefully recurved. (Adapted from *Le Jardin Fleuriste*, vol. 3, p. 286.)

For previous introduction, see S. P. I. No. 44324.

51756. *EUCALYPTUS ALPINA* Lindl. *Myrtaceæ.*

A scrambling small tree with stringy bark, coriaceous leaves almost greasy in luster, fugose buds, and fruits which though smaller than those of *E. muelleri* have some resemblance to them. The tree is confined to the highest parts of the Grampians (Victoria). (Adapted from *Maiden, Critical Revision of the Genus Eucalyptus*, vol. 1, p. 259, and vol. 3, p. 163.)

For previous introduction, see S. P. I. No. 49860.

51757 and 51758. *KENNEDIA MONOPHYLLA* Vent. *Fabaceæ.*
(*Hardenbergia monophylla* Benth.)

51757. "The purple native sarsaparilla from Panton Hill District."
(*Baker.*)

An ornamental Australian vine, with solitary obtuse leaflets up to 4 inches in length and numerous violet or rose-purple flowers borne in twos or threes in racemes. (Adapted from *Maiden, Flowering Plants and Ferns of New South Wales*, pt. 1, p. 55.)

For previous introduction, see S. P. I. No. 45790.

51758. "Variety *fruticosa*."

51759 to 51761. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Buitenzorg, Java. Seeds presented by Dr. M. W. Docters van Leeuwen, director, Botanic Garden. Received December 11, 1920. Quoted notes by the director.

51759. "Variety *aroemanis*."

51761. "Variety *madoe*."

51760. "Variety *golek*."

51762. ADONIS VERNALIS L. Ranunculaceæ.

From Paris, France. Seeds purchased from Vilmorin-Andrieux & Co. Received December 14, 1920.

A fine perennial reaching a height of 2 feet and bearing glistening yellow blossoms, in full sun often measuring 3 to 4 inches across. The entire plant contains about 10 per cent of aconitic acid, which is used in medicine as a substitute for digitalis to slow the action of the heart, increase the force of the heart beat, and increase the blood pressure. (Adapted from *Gardening Illustrated*, vol. 29, p. 146, and *National Standard Dispensatory*, p. 104.)

51763 and 51764.

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920.

51763. *HYLOCEREUS* sp. *Cactaceæ.*

Cactus.

"(No. 510a. Bogota, Colombia. October 24, 1920.) *Pitahaya blanca* (white pitahaya), from the Bogota market. A rare edible-fruited cactus cultivated in Cundinamarca, probably at altitudes of 4,000 to 5,000 feet. The fruits are elliptic and rather slender in outline, about 4 inches long, light yellow externally, containing within a quantity of white, translucent flesh in which small black seeds are embedded. The flavor and quality of the fruit are rather better than those of other pitahayas I have seen." (*Popenoe.*)

51763 and 51764—Continued.

51764. *RUBUS MACROCARPUS* Benth. Rosaceæ. Colombian berry.

"(No. 509a. Bogota, Colombia. October 24, 1920.) The *Colombian berry* or *giant blackberry of Colombia* (Spanish, *mora* or *mora de Castilla*). From El Penon, on the road between Sibate and Fusagasuga, Cundinamarca. Seeds from unusually large and fine fruits of the giant blackberry, of which seeds and plants have been sent in under previous numbers."

For description, see S. P. I. Nos. 51401 and 51706.

51765 to 51768.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920. Quoted notes by Mr. Rock.

51765. *BOTOR TETRAGONOLOBA* (L.) Kuntze. Fabaceæ. Goa bean.
(*Psophocarpus tetragonolobus* DC.)

"No. 28. A bean with four-winged pods, which are borne in great abundance. They are collected while quite green and cooked like string beans. I have eaten this vegetable and found it very delicious, better than the green string bean. Cultivated in Malaya."

For previous introduction, see S. P. I. No. 49711.

51766. *CANARIUM* sp. Balsameaceæ.

"No. 23. Native to China and sold in the markets at Singapore. The seed is edible, like the pili nut of the Philippines."

51767. *CARAPA GUIANENSIS* Aubl. Meliaceæ. Crabwood tree.

"No. 4. A tall tree with large leaves and large globose fruits containing many angular and variably shaped fawn-colored seeds. It is known as the crab-oil tree and is a native of Guiana and tropical Africa. It is cultivated in Singapore."

This tree, which has large ovate leaves, bears triangular nutlike fruits, ripening in June, July, and August; when crushed these exude a rich oil. This oil appears to be equal in lubricating value to ordinary machine oil, and it should be utilized. The cakes from which the oil has been expressed might serve as cattle feed. The tree grows in commercial quantities throughout the lower Amazon regions. The wood excels mahogany. (Adapted from *Lange, Lower Amazon*, pp. 11, 406, and 461.)

For previous introduction, see S. P. I. No. 44711.

51768. *COLEUS ROTUNDIFOLIUS* (Poir.) Cheval. and Perr. Menthaceæ.
(*C. tuberosus* A. Rich.)

"No. 13. This labiate is now cultivated in the Malay Peninsula as a substitute for potatoes. The tubers are produced in abundance, but are small and thin skinned. Plants grown from tubers will produce no tubers the first year, but when planted from cuttings of the green portion of the stem they will produce tubers in five months. The tubers are fully mature when the leaves begin to drop."

For previous introduction, see S. P. I. No. 20427.

51769. *LANSIUM DOMESTICUM* Jack. Meliaceæ. Langsat.

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Garden. Numbered May, 1921.

An erect symmetrical tree, native to the Malay Archipelago, 35 to 40 feet high, with pinnate leaves composed of five to seven leaflets 4 to 8 inches long. The velvety, straw-colored fruits, 1 to 2 inches in diameter, in clusters of 5 to 30, have delicious white aromatic subacid flesh and are usually eaten out of hand, but are also of culinary value.

For previous introduction, see S. P. I. No. 47230.

51770. DIALIUM LAURINUM Baker. Cæsalpiniaceæ.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920.

"No. 27. A leguminous tree, with edible fruits, native to Malaya." (Rock.)

An erect, unarmed tree, native to Malakka, with oblong, rigidly coriaceous leaflets, 4 to 5 inches long, glossy above. The copious, obscure flowers are in ample terminal and axillary panicles. The black 1-seeded pod is fragile, roundish, 1 inch deep, and thinly coated with grayish brown down. The seed is as large as a bean. (Adapted from *Hooker, Flora of British India, vol. 2, p. 269.*)

51771. MANGIFERA INDICA L. Anacardiaceæ. Mango.

From Buitenzorg, Java. Seeds presented by Dr. J. C. Koningsberger, director, Botanic Garden. Received October 15, 1920.

"A mango grown near Surabaya, Java, which has fruits more than 12 inches long, of good quality." (David Fairchild.)

51772 to 51777.

From Bangkok, Siam. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 3, 1920. Quoted notes by Mr. Rock.

51772. FLACOURTIA RUKAM Zoll. and Mor. Flacourtiaceæ.

"No. 30. A handsome tree with small edible berries which make a fine preserve. Native to Malaya."

An unarmed tree with pubescent young branches, glabrous coriaceous leaves 3 to 5 inches long and 1½ to 2 inches wide, and 4-flowered umbels. The tree is much cultivated for its fruits, the size of a large cherry. (Adapted from *Hooker, Flora of British India, vol. 1, p. 192.*)

51773. HYDNOCARPUS ANTHELMINTHICA Pierre. Flacourtiaceæ.

"No. 31. The Siamese chaulmoogra tree."

A vigorous tree, 10 to 20 meters high, with graceful furrowed branches; entire, coriaceous leaves, 10 to 30 centimeters long, pale yellowish above, shining below; and two to three, few-flowered, unilateral racemes of rose-colored or purple flowers. The fruit is large, round, 8 centimeters in diameter, and contains about 80 grayish, nearly ovate seeds. The seeds and the oil expressed from them have been used by the Chinese for three centuries for skin diseases. The tree is called false chaulmoogra by European pharmacists. (Adapted from *Bulletin, Société Botanique de France, vol. 55, p. 523.*)

For previous introduction, see S. P. I. No. 48228.

51774. MANGIFERA ODORATA Griffith. Anacardiaceæ.

"No. 32. A large tree with edible green fruits larger than the ordinary mangos, with a very strong odor. Sold on the market in Singapore."

"This interesting relative of the cultivated mango is indigenous to the island of Malakka, the home of most of the species of *Mangifera*. At Singapore it is called *kuwini*. The name *bumbum* appears to be applied to it in Java. It is a tall tree, said to attain a height of 80 to 100 feet, the trunk and crown resembling those of *M. indica*. It is glabrous throughout or very obscurely pubescent on the panicle; the leaves are 6 to 12 inches long and 2 to 4 inches broad. The odorous flesh-colored flowers are one-fourth of an inch broad; the petals three times as long as the reflexed greenish sepals, which are suffused with blood red. The fruit is oblong, yellow-green, spotted with yellow, offensive in odor, but with yellow fibrous pulp of sweet flavor and lacking any taste of turpentine, which is so frequent in inferior forms of *M. indica*. The stone is compressed and fibrous. While perhaps of not great value for its fruit, this species possesses considerable interest as a possible stock for the mango and for breeding experiments. In the region where it is found the fruit is said to be eaten by the natives, but not by Europeans." (Popenoc.)

51772 to 51777—Continued.

51775. *MERRILLIA CALOXYLON* (Ridley) Swingle. Rutaceæ. **Katinga.**
(*Murraya caloxylon* Ridley.)

"No. 26. A tree with large citronlike, somewhat woody fruit. The seeds are embedded in a thick resinous substance which may be of economic importance. The seeds germinate readily."

The *katinga*, a tree of considerable size, native to southern Siam and Upper Perak, is famous in the Malay Peninsula for its beautiful wood, which is light yellow, ornamented with dark-brown streaks and stains, fairly hard in texture, and takes a good polish. The large yellowish-green flowers are borne in small panicles; the thin, bright deep-green leaves, 8 inches long, have 13 leaflets and a flattened winged rachis. The fresh fruits are subglobose, 70 to 80 millimeters in diameter, nearly smooth, gray-green, with a leathery pericarp 10 to 12 millimeters thick with irregular branched lacunæ filled with resinous gum. The five to six locules, divided by cartilaginous solid walls 3 to 4 millimeters thick, are filled with a transparent jellylike gum surrounding the seeds. It is possible that this species would be worthy of cultivation as an ornamental plant. (Adapted from *Philippine Journal of Science*, vol. 13, p. 338.)

51776. *ONCOSPERMA HORRIDUM* (Griffith) Scheff. Phœnicaceæ. **Palm.**

"No. 20. The *nibung*, a very ornamental palm 80 feet high, which grows usually in swampy forests. The trunk is covered with spines; the wood is used for the manufacture of walking sticks."

A tree with an armed trunk and few, spreading leaves, 14 to 16 feet long, bearing very narrow, acuminate, spreading, coriaceous leaflets 2 to 3 feet long. There are two complete acutely margined spathes—the inner cuspidate, the outer 1 to 1½ feet long and armed. The purplish black fruit is borne on pendulous spadix branches 2 to 3 feet long. (Adapted from *Hooker, Flora of British India*, vol. 6, p. 415.)

For previous introduction, see S. P. I. No. 49549.

51777. *ONCOSPERMA TIGILLARIA* (Jack) Ridley. Phœnicaceæ. **Palm.**

"No. 21. A palm similar to *Oncosperma horridum* [S. P. I. No. 51776 (Rock's No. 20)], but much more graceful. It also occurs in swampy forests."

A very elegant palm, 30 to 40 feet high, distinctly annulate, armed, with a thick graceful crown. The pinnate leaves are 10 to 12 feet long, the pinnae 2 feet long, pendulous, coriaceous, ferruginous scurfy, bearing on the under side scales attached by their middle. The globose berries, the size of a carbine bullet, are borne on pendulous, purplish sanguineous spadix branches. The two spathes are boat-shaped and stout, the outer is green, covered here and there with whitish ferruginous scurf and armed on the outer surface. The inner spathe is almost unarmed, more scurfy, and velvety to the touch. The trunk is much used for making posts. Native to borders of paddy swamps in Malakka and in forests in Laineur. (Adapted from *Calcutta Journal of Natural History*, vol. 5, p. 465.)

51778. *ZEA MAYS* L. Poaceæ.

Corn.

From Marseille, France. Seeds presented by Mr. Stieljès, Institut Colonial de Marseille, through Dr. P. J. S. Cramer. Received October 5, 1920.

"A curious variety of corn with a small cob and small cream-colored grains, which is said to be very productive." (Cramer.)

- 51779 and 51780. *CORYLUS COLUMNATA* L. Betulaceæ.

Turkish hazel.

From Rochester, N. Y. Seeds presented by John Dunbar, assistant superintendent, Department of Parks, through R. E. Horsey, Highland Park Greenhouses. Received October 25, 1920.

51779. The Constantinople nut is a vigorous, free-growing tree, up to 60 feet in height, with a stout trunk, more or less horizontal branches,

51779 and 51780—Continued.

heart-shaped, glossy green leaves 5 inches long, and small hard-shelled nuts inclosed in fleshy, hairy, green involucre. (Adapted from *Gardeners' Chronicle, third series, vol. 40, p. 256.*)

For previous introduction, see S. P. I. No. 49194.

51780. Variety *pyramidalis*. A form of more compact, conelike habit.

51781 to 51785.

From Coban, Guatemala. Seeds presented by Gustav Helmrich. Received November 2, 1920.

51781. *PANICUM GLUTINOSUM* Swartz. Poaceæ. Grass.

"A grass growing in woods from Cuba and Mexico to southern Brazil, originally described from Jamaica. In Brazil called 'graminha do matte' and considered the best of shade grasses. In the West Indies known as 'ginger grass' and 'burr.'" (C. V. Piper.)

For previous introduction, see S. P. I. No. 49450.

51782. *PANICUM LAXUM* Swartz. Poaceæ. Grass.

A more or less spreading grass with simple or sparingly branched culms 40 to 100 centimeters high. Native to the savannas and open woods of Mexico, the West Indies, and south to Paraguay. (Adapted from *Contributions from the National Herbarium, vol. 15, p. 115.*)

For previous introduction, see S. P. I. No. 38041.

51783. *PASPALUM HUMBOLDTIANUM* Fluegge. Poaceæ. Grass.

"A handsome perennial grass producing strong scaly rootstocks, with tufted culms, 40 to 80 centimeters high, erect from a woody, decumbent base. The nodes are densely bearded with upwardly appressed white hairs; the flat, spreading blades, 8 to 18 centimeters long and 8 to 15 millimeters wide, are slightly narrowed toward the base into a stiff point. The margins are usually stiffly fringed with hairs, and the panicles, 10 to 15 centimeters long, are of pale, lax, spreading spikelets, beautifully fringed with long white glistening hairs. Native to rocky ground on the highlands from central Mexico to Argentina." (Agnes Chase.)

For previous introduction, see S. P. I. No. 51096.

51784. *PENNISETUM DURUM* Beal. Poaceæ. Grass.

"*Kul-aj* (reed of cow). Very good fodder, native to Guatemala." (Helmrich.)

51785. *RHYNCHOSPORA* sp. Cyperaceæ. Sedge.

"*Cok-see* (little cutting grass)." (Helmrich.)

51786 to 51791.

From Bogota, Colombia. Seeds collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 10, 1920. Quoted notes by Mr. Popenoe.

51786. *BEFARIA PHILLYREAEFOLIA* Benth. Ericaceæ.

"(No. 488a. October 14, 1920. Herb. No. 1152.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,000 feet. A bushy shrub about 5 feet high, with handsome tubular flowers, deep rose-pink in color and about 1 inch in length."

51787. *BERBERIS RIGIDIFOLIA* H. B. K. Berberidaceæ. Barberry.

"(No. 492a. October 14, 1920. Herb. No. 1118.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,000 feet. A thorny shrub about 6 feet high, with small leaves, small deep-yellow flowers, and oval black fruits about one-fourth of an inch long. An attractive ornamental shrub, recommended for trial in the South and on the Pacific coast."

51788. *ILEX* sp. Aquifoliaceæ.

"(No. 494a. October 14, 1920. Herb. No. 1151.) From Sibate, Cundinamarca, altitude about 8,600 feet. A small tree wild in this region and considered worthy of trial as an ornamental plant. It has oval leaves

51786 to 51791—Continued.

about 3 inches long and produces an abundance of small berries which are first green, then cream colored, then red, and finally, when fully ripe, almost black. They are used locally for making ink. Test in Florida and on the Pacific coast."

51789. *MUTISIA CLEMATIS* L. f. Asteraceæ.

"(No. 487a. October 14, 1920. Herb. No. 1145.) A climbing plant wild and cultivated around the edges of the sabana of Bogota, at altitudes of 8,500 to 9,500 feet. It reaches a height of about 20 feet. Its foliage is graceful in appearance, of a grayish green color, and the bright-crimson flowers, which suggest small single dahlias in appearance, are about 2 inches in diameter. I believe the plant is one worthy of cultivation in California and Florida, where it will probably succeed."

51790. *VACCINIUM FLORIBUNDUM* H. B. K. Vacciniaceæ.

"(No. 490a, October 14, 1920. Herb. No. 1155.) From the mountains near Sibate, Cundinamarca, at an altitude of about 9,400 feet. A small shrub, compact and bushy in habit, about 5 feet high, with fine leaves and small rose-pink tubular flowers."

51791. *VICIA ANDICOLA* H. B. K. Fabaceæ.

"(No. 489a. October 14, 1920. Herb. No. 1153.) A small, slender climber, reaching a height of 8 or 10 feet, with delicate foliage and pea-shaped, bright-blue flowers about half an inch broad. From the mountains near Sibate, Cundinamarca, at an altitude of 9,400 feet. For trial in California and Florida and perhaps in the North as an annual."

51792 and 51793.

From Darwin, Northern Territory, Australia. Seeds presented by C. E. Allen, curator, Botanic Garden. Received November 11, 1920.

51792. *ANDROPOGON BOMBYCINUS* R. Br. Poaceæ.

Grass.

"Native grass, 4 to 5 feet high." (Allen.)

"An erect perennial grass, native to Australia, growing to a height of 2 or 3 feet, becoming rather harsh in texture when mature. The herbage is lemon scented, but readily grazed by animals when young. The grass is very conspicuous when in bloom, on account of the silvery white heads. This grass grows in various soil types, even in drifting sands, and will endure much heat and drought." (C. V. Piper.)

For previous introduction, see S. P. I. No. 17035.

51793. *POLLINIA ARTICULATA* Trin. Poaceæ.

Grass.

"An annual wiry delicate grass of secondary value as pasture. Widely distributed in Asia from China to India and throughout the Malay Archipelago to Australia." (C. V. Piper.)

51794 to 51801.

From Bogota, Colombia. Collected by Wilson Popenoe, Agricultural Explorer of the United States Department of Agriculture. Received November 18, 1920. Quoted notes by Mr. Popenoe.

51794. *AMYGDALUS PERSICA* L. Amygdalaceæ.

Peach.

(*Prunus persica* Stokes.)

"(No. 499a. October 14, 1920.) Seeds of *durazno*, or peach. The common seedling white clingstone grown in the vicinity of Anolaima, Cundinamarca, and elsewhere on the upper slopes of the escarpment, at altitudes of 6,000 to 7,000 feet. This is a very inferior fruit, and the seeds are intended to be grown for testing as stock plants."

51795. *BERBERIS QUINDUENSIS* H. B. K. Berberidaceæ.

Barberry.

"(No. 500a. October 14, 1920. Herb. No. 1154.) Seeds of *tachuelo*, from El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. An arborescent shrub or small tree, up to 20 feet high, with small, stiff, spiny, hollylike leaves, small, golden-yellow, fragrant flowers, and oval, blue-black berries about an inch long. An attractive thing, particularly when in bloom. For trial as an ornamental plant."

51794 to 51801—Continued.

51796. *BROWNEA GRANDICEPS* Jacq. Cæsalpiniaceæ.

"(No. 497a. October 14, 1920.) Seeds of a magnificent flowering tree, native to the Magdalena Valley in Colombia. These seeds are from Guaduas, Cundinamarca, altitude about 3,300 feet.

"The tree is not large—about 20 feet in height—but it produces flame-scarlet flowers in compact clusters (they could almost be termed heads) 6 to 8 inches long and broad. While this plant is tropical, the fact that it is grown at Guaduas makes me think that it may succeed in southern Florida."

51797. *DRIMYS WINTERI* Forst. Magnoliaceæ.

Canelo.

"(No. 505. October 25, 1920. Herb. No. 1109.) Plants of *palo de aji*. From El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A small tree, reaching a height of 18 feet. The leaves are long and slender, bright green above and silvery below. The flowers, which are produced in clusters about 6 inches broad, are individually an inch in diameter, double, pure white, and faintly fragrant. When crushed the leaves have a spicy odor. This is an ornamental tree worthy of trial in the lower South and on the Pacific coast."

For previous introduction, see S. P. I. No. 42869.

51798. *LUPINUS CRUCKSHANKSII* Hook. Fabaceæ.

Lupine.

"(No. 496a. October 14, 1920. Herb. No. 1150.) Seeds of *chocho*. From a garden on the road between Sibate and El Penon; altitude, about 9,400 feet. Several species of lupine are known in Cundinamarca under this common name. Some are wild, some cultivated. The one represented by these seeds is a handsome half-woody shrub, a favorite garden plant on the sabana of Bogota. It reaches a height of about 6 feet and is usually broad and bushy in habit. Above the attractive foliage rise numerous spikes of varicolored pealike flowers. The predominant colors are blue, lilac, white, and yellow.

"To my mind, this is a plant well worth cultivating in the United States. In California and Florida it will probably grow as a perennial. It seems to me that it might be possible to cultivate it elsewhere as an annual."

For previous introduction, see S. P. I. No. 51566.

51799. *TIBOUCHINA* sp. Melastomaceæ.

"(No. 502. October 25, 1920. Herb. No. 1185.) Plants of *siete-cueros*. From El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A handsome arborescent shrub, wild in several parts of Cundinamarca and cultivated in the gardens and dooryards of Bogota. It ultimately reaches about 15 feet in height and produces flowers about 2 inches across; when these first open they are purplish red in color, and as they grow older they change to bluish purple and sometimes almost to deep blue. It is a plant which merits a trial in California and Florida as an ornamental."

51800. *VALLEA STIPULARIS* L. f. Elæocarpaceæ.

"(No. 501a. October 25, 1920. Herb. No. 1149.) Seeds of *raque*. From Sibate, Cundinamarca; altitude, about 9,000 feet. A small tree, common in this region. It has attractive foliage and about July, August, and September produces small clusters of rose-red flowers, followed by wrinkled fruits half an inch in diameter. It is an attractive plant which should be tested in the lower South and on the Pacific coast as an ornamental tree."

51801. *LASIANTHUS* sp. Rubiaceæ.

"(No. 503. October 23, 1920. Herb. No. 1110.) *Clavel del monte*, from El Penon, near Sibate, Cundinamarca; altitude, 9,300 feet. A tall shrub native to this region. It produces rose-pink flowers, somewhat funnel-shaped and about 2 inches across at the mouth. It does not bloom very profusely, but is an attractive thing nevertheless and deserves a trial in the lower South and on the Pacific coast."

51802. SOLANUM BULLATUM Vell. Solanaceæ.

From Lavras, Minas Geraes, Brazil. Seeds presented by B. H. Hunnicutt. Received November 20, 1920.

A South American plant which may possibly be valuable as a forage plant, because of its large percentage of protein. The analysis of air-dried leaves and branches shows 20.88 per cent of protein in the leaves and 14.06 per cent of protein in the branches.

For previous introduction, see S. P. I. No. 42815.

51803 to 51807.

From Singapore, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received December 1, 1920. Quoted notes by Mr. Rock.

51803. ARECA CATECHU L. Phœnicaceæ.

Betel-nut palm.

"No. 11. Variety *alba*. The white-fruited betel-nut palm, cultivated only. The fruits are larger than those of the common variety of *Areca catechu*."

For previous introduction, see S. P. I. No. 51127.

51804. ARTOCARPUS CHAMPEDEN (Lour.) Spreng. Moraceæ.
(*A. polyphema* Pers.)

"No. 8. A species of breadfruit cultivated for its fruits, which are oblong and about 1 foot in length. It is much in favor with the Malays. The seeds are similar to those of the jack fruit and are roasted and eaten by the natives. Propagation is by seed."

51805. CANARIUM RUFUM A. W. Benn. Balsameaceæ.

"No. 9. A tall tree of handsome proportions, producing abundant seeds. The nuts are triangular, and the seeds are eaten like those of *Canarium commune*. It is a native of the Malay Peninsula."

51806. JAGERA SPECIOSA Blume. Sapindaceæ.

"No. 3. A small tree with trilocular fruits which are borne on long pendent racemes. The tree is about 20 feet in height and quite attractive on account of the pinnate foliage and orange-red fruits. It is a native of the Malay Peninsula and New Guinea. The fruits are much sought for by the natives."

51807. STYRAX BENZOIN Dryander. Styracaceæ.

"No. 10. A tall tree producing the gum benjamin of the Malay Peninsula. It occurs quite commonly in the lowland forests together with Dipterocarpaceæ. Native to the Malay Peninsula."

51808. ACACIA sp. Mimosaceæ.

From Quito, Ecuador. Seeds presented by Ludovic Söderström, through E. W. D. Holway, University of Minnesota, Minneapolis, Minn. Received December 2, 1920.

"Seeds from a dry region in Ecuador. It was suggested that they would do well in warm parts of California and Arizona. The wood is exceedingly hard and is used for sugar-cane rollers, etc." (*Holway*.)

51809 to 51823. .

From Buitenzorg, Java. Seeds presented by H. J. Wigman, jr. Received December 3, 1920.

51809. ADENANTHERA PAVONINA L. Mimosaceæ.

Coral-bean tree.

The Indian barricari, the seeds of which are brilliant scarlet and are strung to form ornaments for personal adornment. In India advantage is taken of their uniformity of weight (about 4 grains each) to use them as weights. Powdered and mixed with borax they form an adhesive substance. The seeds are occasionally used as an article of food. The hard, durable heartwood is beautiful coral red when freshly cut and sometimes marked with stripes of a darker shade; after exposure it turns purple, like rosewood; it is used for house building and cabinet-making. A dye is obtained by simply rubbing the wood against a stone,

51809 to 51823—Continued.

and this is used by the Brahmins for marking their foreheads after religious bathing. (Adapted from *Maiden, Useful Native Plants of Australia*, pp. 5, 369, and 637.)

For previous introduction, see S. P. I. No. 49955.

51810. *BARYXYLUM INERME* (Roxb.) Pierre. *Cæsalpiniaceæ*.
(*Peltophorum ferrugineum* Benth.)

A large, quick-growing, symmetrical tree, with a spreading top and fine, graceful feathery foliage, indigenous to the dry regions of Ceylon and the Malay Peninsula where the rainfall varies from 50 to 70 inches. The young leaves and shoots are covered with a brown velvety tomentum. The tree flowers twice a year at irregular seasons, some specimens being in blossom while others near by are in ripe fruit. The flowers are rusty yellow, sweet scented, and borne in large erect panicles. The tree is a magnificent sight when in full bloom. It is especially suited to dry districts, but also thrives to perfection in the moist regions up to 1,800 feet. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, pp. 299 and 452.)

For previous introduction, see S. P. I. No. 41574.

51811. *CANANGIUM ODOBATUM* (Lam.) Baill. *Annonaceæ*.

Ylang-ylang.

A large, quick-growing tree, 60 to 80 feet high, native to the Philippines, Guam, and Java. The large, greenish yellow flowers are strongly scented and yield by distillation the popular perfume ylang-ylang. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 573.)

51812. *CANARIUM INDICUM* Stickm. *Balsameaceæ*.
(*C. commune* L.)

Kanari.

"A handsome Malayan shade tree bearing a stone fruit with a hard endocarp which contains one to three seeds. Fresh, mature seeds contain approximately: Water, 31.3 per cent; oil, 54.5 per cent; protein, 11 per cent; ash, 3.2 per cent; and traces of sugar. A food for infants, to prevent the formation of a firm coagulum during the digestion of cow's milk, is prepared by adding to two parts of cow's milk an emulsion consisting of 1 part ground seeds, 15 parts water, and 5 per cent milk sugar." (W. G. Boersma.)

For previous introduction, see S. P. I. No. 48981.

51813. *CASSIA SIAMEA* Lam. *Cæsalpiniaceæ*.

A large, quick-growing tree, yielding hard dark timber and good fuel. It is an important timber and cabinet tree, native to Ceylon, India, and the Malay Peninsula. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, pp. 452 and 464.)

For previous introduction, see S. P. I. No. 42362.

51814. *CHRYSOPHYLLUM CAINITO* L. *Sapotaceæ*.

Caimito.

A fairly large and handsome West Indian tree, with striking dark-green leaves which are copper colored underneath. The purplish, smooth, round fruit is four-seeded, the seeds being brown and half an inch long. In an unripe state the fruit contains a sticky white latex, but when fully matured the white, transparent, jellylike substance surrounding the seeds is sweet and agreeable. The fruit when cut across presents a stellate form, the cells with their white edible contents radiating from the central axis. The tree is well worth cultivating for ornament or shade for roadsides, etc. It thrives at Peradeniya, where it was first introduced in 1802. Propagated by seed and thrives best in deep, rich, well-drained soil. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 150.)

For previous introduction, see S. P. I. No. 50471.

51815. *DAMMARA ALBA* Rumph. *Pinaceæ*.
(*Agathis loranthifolia* Salisb.)

A splendid tree, up to 100 feet high, with a stem reaching 8 feet in diameter, straight and branchless for two-thirds its length. It is of great

51809 to 51823—Continued.

importance on account of its yield of the transparent dammar resin extensively used for varnish. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 161.)

For previous introduction, see S. P. I. No. 51129.

51816. *DEGUELIA MICROPHYLLA* (Miquel) Valet. Fabaceæ.

A tall tree, native to Sumatra and Java, with pinnate leaves and dense, erect, axillary panicles of violet-colored flowers. Of possible value as a shade tree for coffee plantations. (Adapted from *Icones Bogorienses, Jardin Botanique de Buitenzorg*, vol. 2, pl. 129.)

51817. *ELAEOCARPUS ANGUSTIFOLIUS* Blume. Elæocarpaceæ.

A tree native to Buitenzorg Province, with oblong-lanceolate, acuminate, serrulate leaves and short, axillary racemes of showy flowers. The fruits are globular. (Adapted from *Blume, Bijdragen tot de Flora van Nederlandsch Indië*, p. 120.)

51818. *EUSIDEROXYLON ZWAGERI* Teijsm. and Binn. Lauraceæ.

A large tree with wrinkled reddish bark and reddish tomentose young branches. The coriaceous oblong-elliptic leaves are shining above and glabrous below except for puberulent veins. The oblong-ovate drupes are borne in panicles. (Adapted from *Natuurkundig Tijdschrift voor Nederlandsch-Indië*, vol. 25, p. 292.)

51819. *MIMUSOPS ELENGI* L. Sapotaceæ.

A tree native to Ceylon. The bark is used in native medicine for decaying gums and also for snake bite. (Adapted from *Macmillan, Handbook of Tropical Gardening and Planting*, p. 596.)

For previous introduction, see S. P. I. No. 41809.

51820. *MIMUSOPS KAUKI* L. Sapotaceæ.

"Most of the Straits islands are covered with a valuable tree, the *Mimusops kauki*, the fruit of which is sweet and highly nutritious. In some islands the inhabitants subsist chiefly on it during one season of the year. The *Mimusops* grows on the mainland of the Greater and Lesser Daudai. The fruit is dried in the sun and strung for use in seasons of scarcity. Its shape and sweetness have occasioned the misnomer of 'date' among the whites." (*Gill, A Visit to New Guinea*, p. 201.)

For previous introduction, see S. P. I. No. 48011.

51821. *PTEROCARPUS INDICUS* Willd. Fabaceæ.

Padouk.

A large forest tree with drooping branches, the trunk often being provided with broad buttresses. The leaves, 8 to 10 inches long, are composed of five to nine ovate leaflets 2 to 4 inches long. The standard and wings of the yellow papilionaceous flowers are fringed on the margins. The tree has been introduced as a shade tree in many tropical localities. Cups are made of the beautiful flesh-tinted wood, which turn water yellow, orange, and finally blue. The valuable timber and cabinet wood furnished by this tree shows pale red lines of growth and large conspicuous pores. (Adapted from *Annual Report of the Smithsonian Institution*, 1915, p. 271.)

51822. *PTERYGOTA ALATA* (Roxb.) R. Br. Sterculiaceæ.
(*Sterculia alata* Roxb.)

A large tree of the western peninsula, Sylhet, Chittagong, Pegu, and Martaban, down to Tenasserim. It is found also on the Andaman Islands. The winged seeds are sometimes eaten by the natives of Burma. They are used in Sylhet as a cheap substitute for opium. The yellowish white wood is light, coarsely fibrous, and perishable. (Adapted from *Watt, Economic Products of India*, vol. 6, pt. 3, p. 360.)

For previous introduction, see S. P. I. No. 26938.

51823. *TOONA SINENSIS* (Juss.) Roemer. Meliaceæ.
(*Cedrela sinensis* Juss.)

"One of four best low-growing, ornamental trees. It is said to attain a height of 70 feet in China, but the tallest I have seen in this country (at Philadelphia) is not over 40 feet. It is a comparatively rare tree on account of the difficulty in securing seed, the trees only flowering occa-

51809 to 51823—Continued.

sionally and then only sparingly. Its wood could probably be used to advantage in the manufacture of cheap furniture. All of the species are easily propagated from root cuttings." (G. W. Oliver.)

For previous introduction, see S. P. I. No. 50647.

51824 to 51827. TRICHOSANTHES ANGUINA L. Cucurbitaceæ.

From Calcutta, India. Seeds presented by C. C. Calder, officiating director, Botanical Survey of India. Received December 13, 1920. Quoted notes by Mr. Calder.

51824. "*Chichinga*, black variety. From Howrah district."

51825. "*Chichinga*, black, with stripes. From Howrah district."

51826. "*Chichinga*, white variety. From Howrah district."

51827. "*Chichinga*, white, with stripes. From Howrah district."

51828 and 51829. COFFEA ARABICA L. Rubiaceæ. Coffee.

From Aden, Arabia. Seeds presented by Addison R. Southard, American consul. Received December, 1920. Quoted notes by Mr. Southard.

51828. "*Yaffei* (so called from the name of the Aden hinterland tribe which grows most of it) is considered by some the finest of all Arabian Mocha coffees."

51829. "*Sanani* (so called from the district of Sana, capital of Yeman, where it is grown) is a second quality of Arabian Mocha coffee which comes into the market in considerable quantities."

51830. MYRCIARIA CAULIFLORA (Mart.) Berg. Myrtaceæ. Jaboticaba.

From Porto Alegre, Rio Grande do Sul, Brazil. Seeds presented by G. S. Froes. Received December 14, 1920.

"A Brazilian tree, up to 35 feet high, with narrowly elliptical, sharp-pointed leaves, short-pedicelled flowers produced directly from the bark of the trunk and branches, and purplish violet globose fruits half an inch to 1½ inches in diameter." (Wilson Popenoe.)

For previous introduction, see S. P. I. No. 51267.

51831. GARCINIA MANGOSTANA L. Clusiaceæ. Mangosteen.

From Buitenzorg, Java. Seeds presented by Dr. M. W. Docters van Leeuwen, director, Botanic Garden. Received December 14, 1920.

The mangosteen is renowned as one of the delicious fruits of the world and has been called the "queen of tropical fruits." The tree is strictly tropical and can be successfully grown only under the most favorable soil and climatic conditions.

For previous introduction, see S. P. I. No. 51200.

51832 to 51842. CROTALARIA spp. Fabaceæ.

From Gizeh, Mouderieh, Egypt. Seeds presented by Thomas W. Brown, director, Horticultural Section. Received November 6, 1920.

51832. CROTALARIA ALATA Buch.-Ham.

A suberect undershrub 1 to 2 feet high, with broad stipules forming a wing from one node nearly to the next. The pale flowers are in twos or threes on the racemes. The thin oblong obtuse leaves are 2 to 3 inches long. Native to India, from Kumaon to Assam and the Khasi Hills, ascending to 5,500 feet. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 69.)

For previous introduction, see S. P. I. No. 47667.

51832 to 51842—Continued.

51833. *CROTALARIA GRANTIANA* Harv.

A small slender herbaceous plant with an erect, branching leafy stem, 1 foot in height. The trifoliolate leaves consist of cuneate leaflets one-half to three-fourths of an inch long and not one-sixth of an inch wide. The small, yellow, striate flowers are borne on filiform peduncles. Native to Natal. (Adapted from *Harvey and Sonder, Flora Capensis*, vol. 2, p. 43.)

For previous introduction, see S. P. I. No. 34740.

51834. *CROTALARIA INCANA* L.

A tropical American plant about 1 meter high, erect, branched and somewhat shrubby, and softly gray pubescent. The leaves have three elliptical leaflets. The yellow flowers, with a standard over 10 millimeters wide, are crowded in 12 to 20 flowered elongated racemes 5 to 20 centimeters long. This plant occurs in waste places throughout the Tropics and is in flower all the year. (Adapted from *Rock, Leguminous Plants of Hawaii*, p. 137.)

For previous introduction, see S. P. I. No. 47127.

51835. *CROTALARIA LABURNIFOLIA* L.

A low shrub with slender, elongated, terete branches, membranous, glabrous leaflets 1 to 2 inches long, and elongated, very lax, terminal and lateral racemes of bright-yellow flowers 1 inch long. The keel is very broad, with a long incurved beak. Native to the western Indian Peninsula, Ceylon, and Malakka. (Adapted from *Hooker, Flora of British India*, vol. 2, p. 84.)

For previous introduction, see S. P. I. No. 49279.

51836. *CROTALARIA POLYSERMA* Kotschy.

A densely rufo-villose herbaceous plant with trifoliolate silky leaves and six to eight small, lax, long-peduncled, lateral racemes of violet-blue flowers. The standard is widely obovate, silky pubescent without, and 14 to 16 millimeters long. The wings are oblong with an obtuse tip; the apex of the keel is attenuated into an erect, somewhat obtuse beak. Native to the Nile Land, German East Africa, British East Africa, Sudan, and Eritrea. (Adapted from *Oliver, Flora of Tropical Africa*, vol. 2, p. 42, and *Journal of the Linnæan Society*, vol. 42, p. 321.)

51837. *CROTALARIA RETUSA* L.

A handsome East Indian annual with large yellow flowers in 12-flowered terminal racemes. The large round standard is streaked at the base, and the wings are short and villous at the back. The fluted upright stem, leafy from the base, is 1½ feet high. The oblong, wedge-shaped, entire leaves are clothed beneath with short appressed hairs and are roughish with small elevated points. (Adapted from *Curtis's Botanical Magazine*, pl. 2561.)

For previous introduction, see S. P. I. No. 36969.

51838. *CROTALARIA SALTIANA* Andrews.

A shrub with long, upward-curving, more or less silky branches, deciduous stipules, and dense racemes of yellow flowers. The standard is elliptic-ovate, the wings oblong, and the rounded keel 9 to 11 millimeters long. The trifoliolate leaves with small obovate leaflets are silky pubescent below, glabrous or nearly so above. Native to the Sudan and southern Abyssinia. (Adapted from *Journal of the Linnean Society*, vol. 42, p. 309.)

51839. *CROTALARIA SPECTABILIS* Roth.

A robust undershrub 1 to 1.5 meters high, with oblong or broadly spatulate-oblong leaves which are moderately firm in texture, glabrous above, finely silky beneath, and 7.5 to 15 centimeters long. The foliaceous stipules are persistent. The yellowish purple flowers, 22 millimeters long, are in 20 to 40 flowered racemes 3 to 5 decimeters long. The plant is native to India, ascending to an altitude of 3,000 feet in Kumaon. It is cultivated as a garden flower in the Punjab, India, where it is known as *Sauni*, but it is apparently never cultivated as an agricultural product, though fiber is sometimes prepared from it. (Adapted from *Rock, Leguminous Plants of Hawaii*, p. 127.)

51832 to 51842—Continued.

51840. *CROTALARIA STRIATA* Schrank.

A low-growing Brazilian shrub with rounded green branches, trifoliate subglabrous leaves, and elongated terminal racemes of numerous drooping yellow flowers. The petals are striped with deep orange-brown. The broadly oblong standard is reflexed, and the subfalcate oblong wings are less than half the length of the much-acuminated keel, which is as long as the standard. (Adapted from *Curtis's Botanical Magazine*, pl. 3200.)

For previous introduction, see S. P. I. No. 50751.

51841. *CROTALARIA USARAMOENSIS* Baker f.

A tall herb allied to *Crotalaria lanceolata* E. Mey. from which it differs in its shorter and wider leaflets, 4 to 6 centimeters long and 10 to 16 millimeters wide, subacuminate at the tip and cuneate at the base. The leaves are glabrous above and slightly pubescent below. The numerous yellow striated flowers are in elongated terminal racemes, 15 to 25 centimeters long. The keel is rounded and acute at the tip. Native to German East Africa. (Adapted from *Journal of the Linnean Society*, vol. 42, p. 346.)

51842. *CROTALARIA RETUSA* L.

An ornamental tropical annual with an acutely quadrangular branched stem, 1 foot high, entire, oval, glabrous leaves, and terminal racemes of six to eight rather large and handsome flowers resembling in color those of some species of lupine. The greenish white standard, streaked within with pale blue, is bent back, the obovate wings are yellowish white at the base, the rest deep purple; the keel is whitish, yellow at the tip. (Adapted from *Curtis's Botanical Magazine*, pl. 3034.)

51843 to 51855.

From Rawalpindi, Punjab, India. Seeds presented by R. R. Stewart. Received December 14, 1920. Quoted notes by Mr. Stewart.

51843. *COTONEASTER MICROPHYLLA* Wall. Malaceæ.

A dwarf, dense, usually procumbent, much-branched shrub, with hard, ovate, shining leaves half an inch long, dark green on the upper surface, pubescent or tomentose beneath. The white, solitary flowers are one-third of an inch across, and the globose, bright-red fruits are one-fourth of an inch in diameter. Native to China and the temperate Himalayas at altitudes of 4,000 to 10,000 feet. (Adapted from *Collett, Flora Simlensis*, p. 173.)

For previous introduction, see S. P. I. No. 39008.

51844. *DUCHESNEA* sp. Rosaceæ.

"Wild strawberry."

51845. *IRIS* sp. Iridaceæ.

Iris.

[Received without notes.]

51846. *ROSA* sp. Rosaceæ.

Rose.

[Received without notes.]

51847. *ROSA* sp. Rosaceæ.

Rose.

[Received without notes.]

51848. *ROSA* sp. Rosaceæ.

Rose.

[Received without notes.]

51849. *ROSA* sp. Rosaceæ.

Rose.

[Received as *Rosa webbiana*, but the fruit and seeds do not agree with our material of that species.]

51850. *RUBUS* sp. Rosaceæ.

[Received without notes.]

51851. *RUBUS* sp. Rosaceæ.

[Received without notes.]

51843 to 51855—Continued.

51852. *SAUSSUREA LAPPA* (Decaisne) C. B. Clarke. Asteraceæ.

The aromatic root of this tall perennial, native to Kashmir, at altitudes of 8,000 to 12,000 feet, is of medicinal value. The annual export has been as much as 1,000 tons, a large portion used for incense, further as an insecticide, keeping moths from cloth. The leaves are used as an insecticide as emballage for shawls. (Adapted from *Mueller, Select Extra-Tropical Plants*, p. 492.)

51853. *VIBURNUM* sp. Caprifoliaceæ.

[Received without notes.]

Viburnums are among our best ornamental shrubs, and this may be useful in breeding work if not for its own intrinsic value.

51854. *VIOLA SERPENS* Wall. Violaceæ.

Violet.

An herbaceous perennial with lilac-colored flowers found in woods above 7,000 feet altitude in the hilly districts throughout India and in China and Java; glabrous or with scattered hairs. The stems are short but distinct, covered with withered scales, and often producing runners. The broadly ovate, deeply cordate leaves are 1 to 2 inches long. (Adapted from *Collett, Flora Simlensis*, p. 40.)

51855. *VIOLA* sp. Violaceæ.

[Mixed seed, received without notes.]

51856 to 51869. *LOTUS* spp. Fabaceæ.

From Madrid, Spain. Seeds presented by the Botanic Garden. Received November 26, 1920.

51856. *LOTUS ANGUSTISSIMUS* L.

A plant with upright, sometimes decumbent to ascending, slender stems. The dark-green leaves are short stalked with small leaflets, the lower rounded obovate, and the upper lanceolate to linear. The golden-yellow flowers are often reddish at the tips. Found in meadows, on roadsides, on the less salty of the salt-pasture formations with *Cynodon dactylon*, on moist salt meadows rich in humus, and also in carbonates and sulphate salts, from the Mediterranean region to Hungary and southern France. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, abt. 2, p. 685, and *Hayek, Die Pflanzendecke Oesterreich-Ungarns, Leipzig and Vienna*, pp. 159, 494.)

51857. *LOTUS ANGUSTISSIMUS GRACILIS* (Waldst. and Kit.) Aschers. and Graebn.

This plant differs from the species in its ascending or partly decumbent stem 1 to 3 decimeters long, its broader, elliptic, acute stipules, and its shorter peduncles. It is also less abundant. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, vol. 6, abt. 2, p. 685.)

51858. *LOTUS ARABICUS* L.

A kind of vetch indigenous to Egypt, where it grows along the bed of the Nile, especially above Luxor. During the first Sudanese war this species of lotus was a continual source of trouble to the military authorities, since it was frequently cropped by the transport animals at the various encampments and led to a high mortality among them. By a chemical investigation it was ascertained that the toxicity was due to the production of prussic acid when the plant was moistened with water, as the result of the interaction of a glucosid and an enzym occurring together in its cells. The glucosid (lotusin) was obtained in a pure state and shown to be a derivative of a yellow coloring matter (lotoflavin), the latter in addition to dextrose and prussic acid being produced when lotusin is hydrolyzed, either by the action of the enzym (lotase) present in the plant or by boiling it with dilute mineral acids.

The Arabs are aware that *Lotus arabicus*, which is called "klutcher" in the vernacular, is poisonous only in the immature condition and that when allowed to ripen until seeds have formed it becomes innocuous and is then available as an excellent fodder. A chemical investigation of the fully ripe plants showed that they contained none of the poison-

51856 to 51869—Continued.

ous cyanogenetic glucosid and were consequently harmless. The proportion of prussic acid obtainable from *L. arabicus* is considerable and varies from 26 per cent in the case of young plants to 32 per cent in the case of those almost mature, when the yield of acid reaches the maximum. (Adapted from *Bulletin of the Imperial Institute, London, vol. 1, p. 12.*)

51859. *LOTUS CONIMBRICENSIS* Brot.

A gray-green, more or less hairy plant with decumbent, ascending, or rarely erect thin stems and short-petioled leaves. The leaflets are mostly ovate-lanceolate to obovate. The ovate stipules are longer than the petiole and mostly longer than the leaflets. The small rose-colored flowers are in one-flowered inflorescences. Found in sandy regions or on grassy places on the Mediterranean coast, in the southwest parts of Provence and the Riviera. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, p. 689.*)

51860. *LOTUS CYTISOIDES* L.

A slightly hairy or nearly smooth plant with stipules shorter than those of *Lotus creticus*. The corolla wings are broadly obovate, entirely covering the keel. The pod, 3 to 5 centimeters long, is more or less compressed, torulose thickened, and straight or slightly bent. Found only on the Mediterranean seacoast on rocky precipices. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 672.*)

51861. *LOTUS EDULIS* L.

A more or less hairy plant with ascending or erect, rarely decumbent, branched stems, mostly 1 to 4 decimeters long. The gray-green leaflets are obovate, rarely wedge-linear, and the stipules are broad ovate to heart-shaped, oblique at the base, acute. The large yellow flowers are in heads of one to three. Found in sandy areas in the Mediterranean region only. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 668.*)

For previous introduction, see S. P. I. No. 7731.

51862. *LOTUS FILICAULIS* Durieu.

A form closely allied to *Lotus corniculatus* var. *major*. It is distinguished by the elongated, thin, stiff peduncle. Native to Algeria. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 682.*)

51863. *LOTUS GEBELIA* Vent.

An herbaceous plant, native to the Alps, which flowers all through the summer. The robust and almost woody stem is branched, leafy, glabrous, glaucous green, and one-fourth of a decimeter long. The ternate leaves are subtended by bracts which resemble the sessile, entire leaflets. The flowers, 6 to 10 millimeters long, are at first crimson red, then pale rose, and finally whitish streaked with rose. At night they fold down next the petiole and are covered by the three leaflike bracts. The glabrous pods furnish a pleasantly flavored, nourishing food. (Adapted from *Ventenat, Description des Plantes Nouvelles et Peu Connues, Cultivées dans le Jardin de J. M. Cels, p. 57.*)

51864. *LOTUS JACOBÆUS* L.

A plant with an erect stem, linear leaves, and subterranean pods; native to the Cape Verde Islands.

51865. *LOTUS LAMPROCARPUS* Boiss.

A plant native to the humid grasslands of Attica, with a robust stem often 2 feet long diffusing into long branches. The lower leaves are obovate, the upper oblong-acute. The yellow flowers are clustered in heads of two or three. The narrow erect pods are shining gray, silky, and smooth. (Adapted from *Boissier, Diagnoses Plantarum Orientalium Novarum, vol. 2, no. 9, p. 33.*)

51866. *LOTUS ORNITHOPODIODES* L.

A hairy annual with branched, decumbent, or ascending, rarely erect stems, mostly 1 to 3 decimeters long. The leaflets are wedge shaped at

51856 to 51869—Continued.

the base, obovate, rhombic, the two lower smaller, like stipules, ovate-rhombic. The yellow flowers are in clusters of two to five. There are usually several pods in a cluster, 2 to 5 centimeters long. Found in grassy fields in the Mediterranean region, near the seacoast, in southern Istria, Dalmatia, Croatia, etc. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 669.*)

For previous introduction, see S. P. I. No. 32030.

51867. *LOTUS SUAVEOLENS* Pers.

A slightly hairy plant with a stem which is usually well branched and nearly always decumbent. The inflorescence is mostly three to four flowered. The leaflets are obovate, wedge shaped at the base. Found in similar situations as *L. angustissimus* (which it somewhat resembles in habit) in meadows, on roadsides, on the less salty of the salt-pasture formations with *Cynodon dactylon*, on moist salt meadows rich in humus, and also in carbonates and sulphate salts, in Europe and north-western Africa. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 687.*)

51868. *LOTUS TENUIS* Waldst. and Kit.

A plant 2 to 4, rarely 8 decimeters high, smooth or nearly so, with usually many stems, decumbent or ascending or with erect branches. The leaflets, even the lower stipulelike ones, are linear-lanceolate to linear. The inflorescence is one to five flowered. This is a facultative halophyte found mostly on salty stations, on meadows, or in ravines throughout middle Europe, and in the Tyrol up to an altitude of 945 meters. It is found in swamp meadows, on salt meadows with *Plantago maritima*, on the dry salty pastures with *Salicornea*, on the salt steppes, and in various other halophyte formations. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora, vol. 6, abt. 2, p. 683*, and *Hayek, Die Pflanzendecke Oesterreich-Ungarns, Leipzig and Vienna, pp. 20, 157, 159, and 494.*)

51869. *LOTUS* sp.

[Received as *Lotus articulatus*, for which a place of publication has not yet been found.]

51870 and 51871.

From Penang, Straits Settlements. Seeds collected by J. F. Rock, Agricultural Explorer of the United States Department of Agriculture. Received November 30, 1920. Quoted notes by Mr. Rock.

51870. *CYRTOSTACHYS LAKKA* Beccari. Phoenicaceæ.

Palm.

"(No. 17.) The famous 'sealing-wax palm.'"

A tall, slender, soboliferous palm with pinnatisect leaves about 4 feet long and the leaflets 20 inches long and 1 to 1½ inches wide, green above, ashy gray beneath. The sheath is red. The small ovoid fruits are borne on stout spreading spadix branches 1 to 2 feet long. Native to the humid jungles of Singapore. (Adapted from *Hooker, Flora of British India, vol. 6, p. 414.*)

For previous introduction, see S. P. I. No. 49530.

51871. *MILLETTIA ATROPURPUREA* (Wall.) Benth. Fabaceæ.

"(No. 14.) A fine symmetrical tree with dark foliage and dark-red to purplish black flowers. The pods are large and contain from one to two large brown seeds. It is worthy of cultivation on account of its handsome round crown and dark foliage. A native of the Malay Peninsula and Burma."

51872 to 51885.

From Rochester, N. Y. Presented by John Dunbar, assistant superintendent, Department of Parks. Received December 3, 1920.

51872. *MALUS BACCATA* (L.) Moench. Malaceæ. Siberian crab apple. (*Pyrus baccata* L.)

Seeds of the variety *orthocarpa*.

51872 to 51885—Continued.

51873. *MALUS FLORIBUNDA* Sieb. Malaceæ. Crab apple.
(*Pyrus floribunda* Kirchn.)

Seeds of one of the handsomest of all crab apples and one of the earliest to flower. It is a broad shrub with a trunk dividing at the base into several large branches. The pink flowers, which are deep rose color in the bud, turn white before the petals fall and are produced in the greatest profusion. The dark-green foliage is abundant, but the yellow or orange-colored fruits are not much larger than peas and make little show. The origin of this plant is uncertain. It was first sent to Europe from Japan, but it is not a native of that country. It was probably introduced from China, although it does not appear to be known in China now in a wild state. (Adapted from *American Florist*, vol. 46, p. 945.)

For previous introduction, see S. P. I. No. 49135.

51874. *MALUS NIEDZWETZKYANA* Dieck. Malaceæ. Apple.
(*Pyrus niedzwetzkyana* Hemsl.)

Seeds of a small free-growing tree with long, straight, rather thick flowering branches and smooth, very dark purple bark. The lanceolate leaves, 3 to 5 inches long on slender petioles 1 to 2 inches long, are rather thick, stiff, and tinged red on the fruiting branches. The petiole and midrib are bright red and slightly hairy. The deep rose-purple flowers, 1 to 1½ inches long and three-fourths of an inch across, are very numerous and clustered at the ends of short, lateral branchlets. The woolly calyx is white. The pendulous conical fruits, 1½ to 2 inches long, have crimson-purple skin and rose-purple, pleasantly flavored flesh. The wood is red also, and the leaves turn red in autumn. (Adapted from *Curtis's Botanical Magazine*, pl. 7975.)

For previous introduction, see S. P. I. No. 49037.

51875. *MALUS PRUNIFOLIA* (Willd.) Borkh. Malaceæ. Apple.
(*Pyrus prunifolia* Willd.)

Seeds of a small ornamental tree native to North China and southern Siberia, with beautiful white flowers 1½ inches across, in 6 to 10 flowered umbels, and smooth globose berries, 1 inch in diameter, green, amber yellow, and bright red in varying proportions. The young shoots, petioles, under surfaces of the leaves, and inflorescences are cottony. (Adapted from *Curtis's Botanical Magazine*, pl. 6158.)

For previous introduction, see S. P. I. No. 49038.

51876. *POPULUS ADENOPODA* Maxim. Salicaceæ. Poplar.

Cuttings of a very distinct species easily recognized by the long-acuminate, closely crenate leaves, greenish beneath, of old mature trees. The common low-level poplar of Hupeh and Szechwan and the more eastern parts of the Yangtze Valley. In western Hupeh it is very abundant in open country and woods from river level up to an altitude of 1,500 meters. It is a rather slender, shapely tree, 20 to 25 meters or more tall, with a straight trunk clear of branches for 10 to 15 meters and clothed with smooth pale-gray bark, which on old trees and near the ground becomes dark and slightly fissured. The branches are thin, ascending spreading, and form an oval crown. The leaves vary considerably in degree of pubescence, but on old trees they are glabrous at maturity. On young trees and on adventitious shoots they are densely pubescent. (Adapted from *Sargent, Plantae Wilsonianae*, vol. 3, p. 23.)

For previous introduction, see S. P. I. No. 49040.

51877. *POPULUS MAXIMOWICZII* A. Henry. Salicaceæ. Poplar.

Cuttings of a handsome, stately tree, the most satisfactory of the poplars, of upright, ovate outline, which comes out in foliage 10 days before other trees and is always green, the foliage hanging on as late in the season as almost any deciduous tree. It thrives on thin gravelly soil, so dry that Norway spruce and white ash could not survive on it. In favor of the tree is its rapid growth, 3 to 5 feet a year for the first eight years. Under similar conditions the Norway maple may grow 6 to 24 inches and the red oak and pin oak 12 to 30 inches. The leaf

51872 to 51885—Continued.

is rugose like that of *Rosa rugosa*, and the foliage does not drop from trees planted on gravelly soil where there is less than half an inch of rain in August. The trees at the Arnold Arboretum, now 20 years old and 35 feet high, have never been attacked by borers, and the leaves apparently have no attraction for any leaf-eating caterpillar. The fruiting catkins, 7 to 10 inches long, remain on the trees until September without opening. It is one of the few large exotic trees with deciduous leaves which can be recommended for general planting in the Northern States. (Adapted from *Garden Magazine*, vol. 29, p. 38.)

For previous introduction, see S. P. I. No. 49041.

51878. *PRUNUS AMERICANA LANATA* Sudworth. Amygdalaceæ. Plum.

Seeds of a thorny tree, 3 to 12 meters high, with ovate-serrate, very veiny leaves; the leaves, petioles, and shoots are covered with a dense, pale tomentum. Occurring sparsely in Texas on the San Antonio River and its tributaries, where the fruit is said to be yellow and less than 12 millimeters in diameter. (Adapted from *Contributions from the U. S. National Herbarium*, vol. 2, p. 102.)

51879. *PRUNUS HORTULANA* Bailey. Amygdalaceæ. Wildgoose plum.

Seeds of a vigorous tree, attaining a height of 30 feet or more, the shaggy trunk sometimes a foot in diameter, becoming furrowed in age. The bark is gray-brown, thick, and contains deposits of red cork cells which show as bright-red blotches or as thick layers when the bark is sectioned. The branches are very spreading and open, twiggy, slender, and thorny. The thin, peachlike leaves, 5 inches long and 1½ inches wide, become leathery, smooth, and glossy above and almost glabrous below except for the pubescent veins. The white, ill-scented flowers, three-fourths of an inch across, borne on very long spurs, open after the leaves expand and bloom later than any other cultivated plum. The clingstone fruit ripens very late, is globose, oval, and 1 inch in diameter. The thick, tough, and astringent skin is yellow to red with small conspicuous dots. The golden-yellow, coarse, firm, juicy flesh is strongly aromatic, and mildly sweet. The tree is found wild in Illinois, western Kentucky, western Tennessee, Missouri, northern Arkansas, Oklahoma, and southeastern Kansas. (Adapted from *Hedrick, Plums of New York*, p. 64.)

For previous introduction, see S. P. I. No. 41704.

51880. *PRUNUS MEXICANA* S. Wats. Amygdalaceæ. Plum.

Seeds of a plant with its young branches, pedicels, and petioles canescent with a short dense subtomentose pubescence. The leaves, 2 to 3 inches long, are oblong-lanceolate, acuminate, rounded at the base, acutely toothed, puberulent above, pubescent and lighter colored beneath. The compressed-ovate fruits are on short fascicled pedicels. Found at Lerios, Coahuila, Mexico. (Adapted from *Proceedings of the American Academy*, vol. 17, p. 353.)

For previous introduction, see S. P. I. No. 32458.

51881. *PRUNUS MUNSONIANA* Wight and Hedrick. Amygdalaceæ. Plum.

Seeds of a tree, 20 to 30 feet high, with grayish brown bark, shaggy and furrowed, and spreading, slender, zigzag branches, little or not at all thorny. The leaves, bright green and lustrous above, are dull green below, and the lower surfaces of the veins are pubescent; the leaves are lanceolate to oblong-lanceolate, 4 inches long and 1½ inches wide, with finely serrate margins. The white flowers, three-fourths of an inch across, appear before or with the leaves, late in the season, on lateral spurs. The globose, bright currant-red, clingstone fruits, an inch in diameter with conspicuous whitish dots, ripen early and have yellow, juicy, melting flesh which is fibrous, sweetish, aromatic, and good. The fruit ships and keeps well considering the juiciness of most of the varieties. One of the best known plums for home and market use; they have a sprightly vinous flavor and are pleasant to eat either out.

51872 to 51885—Continued.

of hand or cooked. The trees form dense thickets in northern Texas, eastern Oklahoma, and parts of Missouri. A robust form is hardy in central New York. (Adapted from *Hedrick, Plums of New York*, p. 80.)

51882. *PRUNUS REVERCHONII* Sargent. Amygdalaceæ. Plum.

Seeds of a shrub sometimes 4 meters high, usually much smaller, growing in small thickets, with erect stems and slender glabrous branchlets, light orange-brown at first, bright chestnut brown, and very lustrous and marked by small orbicular white lenticels during their first year, becoming dull reddish brown the following season. When its branches are covered by its crowded clusters of white flowers 1.2 centimeters in diameter, set off by the green of the young leaves, the plant is a beautiful object and may become a valuable addition to the list of early garden shrubs. When the leaves unfold they are slightly hairy above and coated below with long matted pale hairs and at maturity are thin, yellow-green, and mostly glabrous, 4.5 to 8 centimeters long and 2 to 2.5 centimeters wide. The subglobose, red or amber fruit, 1.5 to 1.8 centimeters in diameter, has a thick skin and thin acid flesh. (Adapted from *Sargent, Trees and Shrubs*, vol. 2, p. 158.)

51883. *PYRUS BETULAEFOLIA* Bunge. Malaceæ. Pear.

Seeds of a tall, very handsome tree from northern China, with crowded clusters of rather small flowers which are followed by globose fruits not much larger than peas. The tree is very hardy, vigorous, and fast growing. (Adapted from *Arnold Arboretum Bulletin of Popular Information*, No. 21.)

For previous introduction, see S. P. I. No. 45822.

51884. *PYRUS NIVALIS* Jacq. Malaceæ. Pear.

Seeds of a small tree of sturdy habit, with its young shoots thickly covered with a white wool. The oval, entire leaves are 2 to 3 inches long. The pure white flowers, 1½ inches across, are produced in conspicuous clusters. The roundish, yellow-green fruit is 1½ inches or more in diameter. The tree is native to eastern Europe and Asia Minor, where it is sometimes more than 50 feet high. It is a very beautiful tree early in the season, owing to the pure-white shoots and abundant flowers. The tree is cultivated in France for its fruit, which is not eaten until bletted. (Adapted from *Bean, Trees and Shrubs Hardy in the British Isles*, vol. 2, p. 289.)

For previous introduction, see S. P. I. No. 42797.

51885. *PYRUS SALICIFOLIA* Pall. Malaceæ. Willow-leaved pear.

Seeds of the handsome, willow-leaved pear, native to the eastern Mediterranean region, to various parts of southern Russia, and as far north as Siberia. The round-headed tree is 20 to 25 feet high, has a short stout trunk, and bears beautiful willowlike grayish to silvery leaves 1 to 3 inches long and scarcely more than half an inch wide. The dense corymbs of white flowers are borne freely in April. (Adapted from *Gardening Illustrated*, vol. 34, p. 305.)

51886 and 51887. *CITRUS* spp. Rutaceæ.

From Tripoli, Libia, Africa. Budwood presented by Dr. O. Fenzi, director, Stabilimento Orticolo Libico. Received December 18, 1920. Quoted notes by Doctor Fenzi.

51886. *CITRUS NOBILIS DELICIOSA* (Ten.) Swingle. Mandarin orange.

"*Giant early mandarin*. A mandarin of extra superior quality, ripening as early as the end of October, with an extra large fruit, well filled, and with thin skin; the pulp is very juicy, sweet, and aromatic."

51887. *CITRUS SINENSIS* (L.) Osbeck. Orange.

"*Lim dem* (Tripoli blood orange), considered the very best in its section. It is generally seedless, oval in shape, with nearly brick-colored skin. Some years ago a small export was made to Hamburg and realized higher prices than any of the best Spanish or California varieties."

51888 and 51889. HEDYSARUM CORONARIUM L. Fabaceæ. Sulla.

From Valetta, Malta. Seeds presented by the Società Economico-Agraria del Gruppo di Malta, through Carl R. Loop, American consul. Received December 18, 1920.

"Sulla is a deep-rooting perennial legume which is grown extensively in the Mediterranean region. It will withstand light frosts, but heavy freezing usually kills it back. It is adapted to deep, calcareous, well-drained soils, and requires much the same treatment as alfalfa. If sown under irrigation, about three cuttings a season may be obtained, but under ordinary conditions it will not be found so satisfactory a crop as alfalfa. The chief value of sulla lies in its use as a soil-improving crop and as hay." (*J. M. Westgate.*)

51888. Gozo. "An early-maturing crop." (*Loop.*)

51889. Malta.

51890 to 51892.

From Nice, France. Seeds presented by Dr. A. Robertson Proschowsky. Received December 22, 1920.

51890. BUTIA CAPITATA PULPOSA (Barb.-Rodr.) Becc. Phœnicaceæ.
(*Cocos pulposa* Barb.-Rodr.) **Palm.**

"A hardy palm from southern Brazil, belonging to the same group as the species commonly cultivated in California as *Cocos australis*, *C. yatay*, and *C. eriospatha*. The trunk is 6 to 12 feet tall by 1½ to 2 feet in diameter with rather short, abruptly arched leaves 6 to 9 feet long. The petioles are armed with stout spines. The edible fruit is yellow, about 1 inch long by 1½ inches in diameter, and the pulp is of a texture and taste somewhat like that of the pineapple." (*C. B. Doyle.*)

For previous introduction, see S. P. I. No. 47350.

51891. EHRETIA ACUMINATA R. Br. Boraginaceæ.

A tree 30 feet high, native to Bhutan and the eastern parts of Bengal, where it flowers during the hot season. The small white flowers are clustered in distant fascicles in axillary and terminal compound panicles. The leaves are smooth, serrate, and oblong-lanceolate. The round red pulpy drupes, about the size of a pea, are considered delicious by the inhabitants of Bhutan. (Adapted from *Edwards's Botanical Register*, vol. 13, p. 1097.)

For previous introduction, see S. P. I. No. 34557.

51892. SCHOTIA LATIFOLIA Jacq. Cæsalpinaceæ.

An ornamental shrub with rich, beautiful foliage of reddish color when young. The flesh-colored flowers are in large panicles. Suitable to be grown in pots for blooming in conservatories and for cut flowers; can be grown in open ground wherever the lemon is hardy. (Adapted from *Southern California Acclimatizing Association*, Santa Barbara, Calif., May, 1897, No. 5, p. 61.)

For previous introduction, see S. P. I. No. 3470.

51893. CUCUMIS MELO L. Cucurbitaceæ. Muskmelon.

From Teheran, Persia. Seeds presented by John L. Caldwell, American Minister. Received December 23, 1920.

"The famous Persian Ispahan melon, known locally as *Kharbuza Gorgob*. These melons are famed for their delicious sweetness." (*Caldwell.*)

51894. AVENA NUDA Hoejer. Poaceæ. Naked oats.

From Chefoo, Shantung, China. Seeds presented by A. Sugden. Received December 23, 1920.

"Fresh huskless oats of surprising weight. They must be very solid." (*Sugden.*)

51895. PHLEUM PRATENSE L. Poaceæ.**Timothy.**

From Christiania, Norway. Seeds presented by Dr. N. Wille, director, Botanic Garden. Received December 14, 1920.

"*Norsk Timoteifrö.*" (Wille.)

A local Norse variety of timothy introduced for forage-crop investigations.

51896. COLOCASIA ESCULENTA (L.) Schott. Araceæ. Dasheen.

From Brooksville, Fla. Grown at the Plant Introduction Garden. Received at Washington, D. C., July 3, 1919; numbered in December, 1920.

"As grown at Brooksville in 1920, these plants of unknown origin were somewhat smaller than the Trinidad dasheen, were later in maturing than that variety, and were all in flower early in November. Leaf petioles nearly plain green, with upper part more or less shaded with maroon. Blade with very irregular petiolar spot, extending along midrib and basal veins. Inflorescence small, one to each plant. Tube of spathe $1\frac{1}{2}$ inches long; limb, about 8 inches; pistillate portion of spadix, 1 inch. A $3\frac{1}{4}$ -inch corm tested in cooking was dry and mealy and of good flavor. This dasheen, or taro, appears to be distinct from any previously received." (R. A. Young.)

51897. STILLINGIA SEBIFERA (L.) Michx. Euphorbiaceæ.

(*Sapium sebiferum* Roxb.)

From San Antonio, Tex. Seeds presented by the superintendent, San Antonio Experiment Farm. Received November 10, 1920.

This tree, which occurs in all the warmer parts of China, is long lived, growing to 40 or 50 feet in height, with a diameter of 5 or 6 feet at maturity. The foliage takes on beautiful tints in autumn. The fruits are three celled, flattened-ovoid, and about three-fifths of an inch in diameter. When ripe they are blackish brown and woody in appearance and are either gathered by hand or knocked down by poles. After being collected, the fruits are spread in the sun, where they open and each liberates three elliptical seeds which are covered with a white substance. This covering is a fat or tallow and is removed by steaming and rubbing through a bamboo sieve. The fat is collected and melted, molded into cakes, and sold as the "pi-yu" of commerce. The seeds from which the fat has been removed are crushed, and the oil expressed from them is the "ting-yu" of commerce. In China the oil and tallow are used in the manufacture of candles. Both these products are also exported in quantity to Europe, where they are used in the manufacture of soap. (Adapted from Wilson, *A Naturalist in Western China*, vol. 2, p. 67.)

These seeds were collected from a tree sent to the experiment farm in 1910 under S. P. I. No. 23218.

For previous introduction, see S. P. I. No. 47363.

51898 to 52267.

From East Africa. Seeds collected by Dr. H. L. Shantz, Agricultural Explorer of the United States Department of Agriculture. Received October 20, 1920. Quoted notes by Doctor Shantz.

51898. ABUTILON sp. Malvaceæ.

"(No. 1294. Butiaba, Northern Province, Uganda. July 19, 1920.) A small yellow hibiscuslike flower with green foliage."

51899. ABUTILON sp. Malvaceæ.

"(No. 1325. Lur, Anglo-Egyptian Sudan. July 27, 1920.) A small wait-a-bit with a smilaxlike leaf and a yellow flower."

51900. ACACIA SCORPIOIDES (L.) W. F. Wight. Mimosaceæ.

(*A. arabica* Willd.)

"(Nos. 1528 and 1528a. Jebelein, Sennar Province, Anglo-Egyptian Sudan. August 14, 1920.) *Garat* or *garad*; acacialike plant used for tanning."

For previous introduction, see S. P. I. No. 50110.

51898 to 52267—Continued.

51901 and 51902. *ALBIZZIA LEBBECK* (L.) Benth. Mimosaceæ.

Lebbeck tree.

51901. "(No. 1474. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A large flat-topped acacialike tree with a very heavy crop of large, flat pods. It is grown throughout central and northeastern Africa (Nile Valley)."

For previous introduction, see S. P. I. No. 50713.

51902. "(No. 1545. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) An acacialike tree which bears thin pods."

For previous introduction, see S. P. I. No. 50713.

51903. *ANNONA SENEGALENSIS* Pers. Annonaceæ. Custard-apple.

"(Nos. 1279 and 1279a. West of Misindi, Northern Province, Uganda. July 19, 1920.) Custard-apple. I have observed this all through Africa, but this is the first ripe fruit I have seen."

For previous introduction, see S. P. I. No. 49843.

51904. *ANOGEISSUS LEIOCARPA* (DC.) Guill. and Perr. Combretaceæ.

"(No. 1363. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920. Herb. No. 935.) Seed of a fine birchlike tree with the broad-spreading habit of a fig."

51905 to 51907. *ARACHIS HYPOGAEA* L. Fabaceæ. Peanut.

51905. "(No. 1349. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) Monkey nuts (peanuts); one of the chief crops here."

51906. "(No. 1496. Sinsima, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Peanuts grown by the Bori; voandzeia is also grown."

51907. "(No. 1532. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Peanuts; small type grown here for Egyptian market."

51908. *ARISTIDA* sp. Poaceæ.

Grass.

"(No. 1184. Kisumu, Nyanza Province, Kenia. July 11, 1920.) Very abundant here; of doubtful value."

51909. *ASPARAGUS FALCATUS* L. Convallariaceæ.

Asparagus.

"(No. 1302. Panyamur, Northern Province, Uganda. July 20, 1920.) A spiny type of asparagus."

For previous introduction, see S. P. I. No. 33725.

51910. *BIXA ORELLANA* L. Bixaceæ.

Annatto tree.

"(No. 1276. Misindi, Northern Province, Uganda. July 18, 1920.) Used as a dye plant. A very attractive shrub in central Africa."

For previous introduction, see S. P. I. No. 50222.

51911. *BRACHYSTEGIA* sp. Cæsalpiniaceæ.

"(No. 1278. Misindi, Northern Province, Uganda. July 18, 1920.) A beautiful Mopanelike shrub."

51912. *BUTYROSPERMUM PARKII* (Don) Kotschy. Sapotaceæ.

"(No. 1348. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A large tree and one of the most valuable oil trees, from the seeds of which is obtained a solid fat called shea butter. The seeds are roasted and ground, and the oil is boiled off."

For previous introduction, see S. P. I. No. 21057.

51913 and 51914. *CAJAN INDICUM* Spreng. Fabaceæ.

Pigeon-pea.

51913. "(No. 1267. Misindi, Northern Province, Uganda. July 17, 1920.) Pigeon-peas from the native market."

51914. "(No. 1543. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A small reddish pigeon-pea."

51898 to 52267—Continued.

51915. *CARDIOSPERMUM* sp. Sapindaceæ.

"(No. 1277. Misindi, Northern Province, Uganda. July 18, 1920.) A vine with a leaf similar to that of a clematis, but delicate in structure. The delicate white flower is followed by a three-sided bladder-shaped pod with one seed in the center of each of the three carpels."

51916. *CARDIOSPERMUM* sp. Sapindaceæ.

"(No. 1343. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A pretty vine with a bladder-shaped pod."

51917. *CASSIA* sp. *Cæsalpinaceæ*.

"(No. 1350. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A small legume with a partition between seeds."

51918. *CASSIA* sp. *Cæsalpinaceæ*.

"(No. 1352. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A pink-flowered legume with a leaf like a rose."

51919. *CASSIA* sp. *Cæsalpinaceæ*.

"(No. 1420. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) A small legume which is abundant on the lowlands."

51920 and 51921. *CHLORIS ABYSSINICA* Hochst. Poaceæ. Grass.

51920. "(No. 1254. Namasagali, Eastern Province, Uganda. July 13, 1920.) Grass."

51921. "(No. 1415. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920. Herb. No. 941.) Grass which is abundant in central Africa but seldom dominant."

51922. *CICER ARIETINUM* L. Fabaceæ. Chick-pea.

"(No. 1535. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A small chick-pea called *kob kobeck*."

51923. *CITRULLUS VULGARIS* Schrad. Cucurbitaceæ. Watermelon.

"(No. 1533. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Seed of a cucurbit sold in market as a food called *durum*."

51924. *CLITORIA TERNATEA* L. Fabaceæ.

"(No. 1502. Malek, Mongalla Province, Anglo-Egyptian Sudan. August 9, 1920.) A beautiful leguminous vine with bright-blue flowers."

For previous introduction, see S. P. I. No. 39301.

51925. *COSMOS SULPHUREUS* Cav. Asteraceæ. Cosmos.

"(No. 1270. Misindi, Northern Province, Uganda. July 18, 1920.) An orange-colored cosmos which forms a very pretty hedge."

For previous introduction, see S. P. I. No. 37884.

51926. *CROTALARIA* sp. Fabaceæ.

"(No. 1323. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A small yellow legume."

51927. *CROTALARIA* sp. Fabaceæ.

"(No. 1365. Near Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A small legume."

51928. *CROTALARIA* sp. Fabaceæ.

"(No. 1403. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A *Crotalaria* with large hairy pods."

51929. *CROTALARIA* sp. Fabaceæ.

"(No. 1418. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) A very small, yellow-flowered legume which forms dense mats or tangles of stems at the base of hills."

51930. *CROTALARIA* sp. Fabaceæ.

"(No. 1504. Shambe, Bahr el Ghazal Province, Anglo-Egyptian Sudan. August 10, 1920.) A blue-flowered *Crotalaria* with hairy pods."

51898 to 52267—Continued.

51931 and 51932. *CUCUMIS METULIFERUS* E. Mey. Cucurbitaceæ.

Cucumber.

51931. "(Nos. 1295 and 1295a. Butiaba, Northern Province, Uganda. July 19, 1920.) A cucumber which is red near the tip; it ripens very unequally; is eaten by birds."

51932. "(No. 1495. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A wild red type of cucumber, $1\frac{1}{2}$ by 2 or $2\frac{1}{2}$ inches. When ripe they are eaten by birds."51933 and 51934. *CUCUMIS SATIVUS* L. Cucurbitaceæ. Cucumber.

51933. "(No. 1207. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Cucumber; a small type from the market."

51934. "(No. 1494. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A deep-green cucumber with yellow markings."

51935. *CUCUMIS* sp. Cucurbitaceæ.

"(No. 1330. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) A small cucumber which is very popular with the natives of this section."

51936. *CUCUMIS* sp. Cucurbitaceæ.

"(No. 1417. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 4, 1920.) A large cucumber with long spines; orange color when ripe."

51937. *CUCUMIS* sp. Cucurbitaceæ."(No. 1537. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Senat*. A cucumberlike plant from the Red Sea region; the seeds are used as food."51938. *DOLICHOS LABLAB* L. Fabaceæ.

Hyacinth bean.

"(No. 1539. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Kaseringique*. A flat bean with a large white hilum. There are also brown and black varieties."51939. *DURANTA REPENS* L. Verbenaceæ."(No. 1275. Misindi, Northern Province, Uganda. July 18, 1920.) A beautiful white-flowered type of *Duranta*."

For previous introduction, see S. P. I. No. 48707.

51940 and 51941. *ECHINOCHLOA PYRAMIDALIS* (Lam.) Hitchc. and Chase. (*Panicum pyramidale* Lam.) [Poaceæ. Grass.]

51940. "(No. 1414. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920. Herb. No. 940.) A large grass which grows along watercourses and appears to extend throughout central Africa. It grows on soil a little more moist than that in which sorghum grows."

51941. "(No. 1503. Shambe, Bahr el Ghazal Province, Anglo-Egyptian Sudan. August 10, 1920.) A grass which is characteristic of the river front."

For previous introduction, see S. P. I. No. 49999.

51942 and 51943. *ELEUSINE CORACANA* (L.) Gaertn. Poaceæ.

Ragi millet

51942. "(No. 1257. Jinja, Eastern Province, Uganda. July 13 1920.) Eleusine."

51943. "(No. 1264. Misindi, Northern Province, Uganda. July 17, 1920.) Eleusine from the market at Misindi."

51944 and 51945. *GOSSYPIUM HIRSUTUM* L. Malvaceæ. Cotton.

51944. "(No. 1259. Palango, Eastern Province, Uganda. July 13, 1920.) Cotton now being planted here; it is probably Nyasaland or American Upland."

51945. "(No. 1335a. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Cotton from a native field."

51898 to 52267—Continued.

51946 to 51949. *Gossypium nanking soudanensis* Watt. Malvaceæ. Cotton.

51946. "(No. 1347. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920. Herb. No. 912.) Cotton."

51947. "(No. 1359. Between Shindurru and Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920. Herb. No. 933.) Cotton; a wild plant in natural vegetation."

51948. "(No. 1366. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Apparently like No. 1359 [S. P. I. No. 51947]."

51949. "(No. 1500a. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920. Cotton grown by the natives."

51950. *Gossypium* sp. Malvaceæ. Cotton.

"(No. 1304. Mutu, Northern Province, Uganda. July 20, 1920.) A few seeds of cotton, probably wild."

51951. *Melhanian ferruginea* A. Rich. Sterculiaceæ.

"(No. 1327. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A hairy-leaved plant with yellow flowers."

51952 to 52050. *Holcus sorghum* L. Poaceæ. Sorghum.
(*Sorghum vulgare* Pers.)

51952. "(No. 1209. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Kafir corn just as sold in the market."

51953. "(No. 1200. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; spreading red head not as dark as No. 1197 [S. P. I. No. 51579], but much darker than No. 1198 [S. P. I. No. 51580]."

For an illustration of this and the four following sorghums, see Plate VI.

51954. "(No. 1201. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra: a spreading white kafirlike type."

51955. "(No. 1202. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Close, dark-red or tan-colored head, similar in color to No. 1198 [S. P. I. No. 51580]."

51956. "(No. 1203. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; spreading head of light-tan color."

51957. "(No. 1204. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; a very dark rather open but short-branched head."

51958. "(No. 1205. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Durra; a very dense head of red-tan color."

51959. "(No. 1266. Misindi, Northern Province, Uganda. July 17, 1920.) Kafir corn."

51960. "(No. 1301. Panyamur, Northern Province, Uganda. July 20, 1920.) Kafir corn."

51961. "(No. 1320. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) Kafir corn; a small red head of m'tama."

51962. "(No. 1321. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A small, very dark head."

51963. "(No. 1322. Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) A lighter head, more open and spreading."

51964. "(No. 1324. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A white kafir corn."

51965. "(No. 1331. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Kafir corn with a long, open, white head."

51966. "(No. 1332. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Long, open, red head."

51967. "(No. 1333. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Small, dense, red head."

51898 to 52267—Continued.

51968. "(No. 1334. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Dense, red head, not so small as the preceding number."
51969. "(No. 1335. Atokaferri, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Long, tan head."
51970. "(No. 1454. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Large, spreading head of purplish tan color; abundant."
51971. "(No. 1455. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Spreading deep-red head; the branches of the head hang down."
51972. "(No. 1456. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Semipendent, spreading, white head with tan-colored tips."
51973. "(No. 1457. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with tan tips, red hull, and semipendent branches."
51974. "(No. 1458. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with a tan tinge and red hull; the branches are pendent with an upright central spike."
51975. "(No. 1460. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) White with black hull; the seeds are pointed."
51976. "(No. 1461. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Black hull, white with purple spots; a close head, but the branches stand distinct."
51977. "(No. 1462. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Grain stained purple; dark hull; short stubby, rather open head."
51978. "(No. 1463. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Light-lemon grain with orange hull and rather spreading head."
51979. "(No. 1464. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Seed light tan; very long, rather open head, similar to No. 1463 [S. P. I. No. 51978]."
51980. "(No. 1465. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Very white head, deep-red almost black hull, plump white grain, purple tip."
51981. "(No. 1467. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Dull tan, rather long, close head; hull orange. Weevils were at work on this while it was still standing in the field."
51982. "(No. 1467a. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Durra."
51983. "(No. 1468. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) Light lemon-colored head and orange-colored bracts; a very fine type similar to No. 1464 [S. P. I. No. 51979]."
51984. "(No. 1469. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A long head of deep almost reddish tan or wine color."
51985. "(No. 1470. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A small, dense head of deep purple or wine color."
51986. "(No. 1471. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A dense, white head with black hull, mottled with tan and purple."
51987. "(No. 1472. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 7, 1920.) A very large, dense, deep-red head with a tendency to gooseneck, which is rare here."

51898 to 52267—Continued.

51988. "(No. 1505. Tango, Upper Nile Province, Anglo-Egyptian Sudan. August 12, 1920.) Durra; a large-seeded type grown locally."
51989. "(No. 1525a. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) Durra grown locally."
51990. "(No. 1526. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) Red durra."
51991. "(No. 1530. Jebelein, Sennar Province, Anglo-Egyptian Sudan. August 14, 1920.) A large-seeded white durra."
51992. "(No. 1546. Atbara, Berber Province, Anglo-Egyptian Sudan. August 24, 1920.) Irrigated durra; a uniform, small-headed type."
51993. "(No. 1547. Edfou, Egypt. August 27, 1920.) Durra with very dense, uniform white heads."
51994. Variety *abyssinicus*. "(No. 1429. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Almost white awned."
51995. Variety *abyssinicus*. "(No. 1512. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) A light, hairy type."
51996. Variety *cordofanus*. "(No. 1508. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Rather hairy, awnless, light, but dark when ripe."
51997. Variety *cordofanus*. "(No. 1510. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Orange color, unawned except when very young; smooth."
51998. Variety *cordofanus*. "(No. 1511. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Similar to the preceding number."
51999. Variety *cordofanus*. "(No. 1521. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52000. Variety *eichengeri*. "(No. 1256. Jinja, Eastern Province, Uganda. July 13, 1920.) A small type."
52001. Variety *eichengeri*. "(No. 1309. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awned type."
52002. Variety *eichengeri*. "(No. 1310. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awned; rather small flower."
52003. Variety *eichengeri*. "(No. 1312. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Several small awned heads."
52004. Variety *eichengeri*. "(No. 1313. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large awned heads."
52005. Variety *eichengeri*. "(No. 1338. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum typical of this section."
52006. Variety *eichengeri*. "(No. 1357. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A light-colored type."
52007. Variety *eichengeri*. "(No. 1361. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A tall light type collected near Nyonki."
52008. Variety *eichengeri*. "(No. 1522. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52009. Variety *eichengeri*. "(No. 1523. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."

51898 to 52267—Continued.

52010. Variety *eichengeri*. "(No. 1524. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Large, light, and awned."
52011. Variety *eichengeri*. "(No. 1525. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Two very light, small heads."
- 52012 to 52014. Variety *niloticus*. "(Namasagali, Eastern Province, Uganda. July 13, 1920.) Collected near the Nile on land previously cultivated by the natives; this land naturally produces tall Cymbopogon and Panicumlike grasses. Much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine, kafir corn, and corn are also grown."
52012. (No. 1239.) 52014. (No. 1249.)
52013. (No. 1248.)
52015. Variety *niloticus*. "(No. 1291. Escarpment near Butiaba, Northern Province, Uganda. July 19, 1920. Collected between Escarpment and Butiaba (7 miles)."
- 52016 to 52019. Variety *niloticus*. "(Nos. 1370 to 1373. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."
52020. Variety *niloticus*. "(No. 1422. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Heavy head, not awned; distinct type."
52021. Variety *niloticus*. "(No. 1423. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Large, rather light, **awned type; more common type along the river.**"
52022. Variety *niloticus*. "(No. 1431. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dark awnless type."
52023. Variety *niloticus*. "(No. 1433. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Large, dark type."
52024. Variety *niloticus*. "(No. 1434. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1433 [S. P. I. No. 52023]."
52025. Variety *niloticus*. "(No. 1448. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Heavy, dark, awnless type."
52026. Variety *niloticus*. "(No. 1449. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Sorghum."
52027. Variety *niloticus*. "(No. 1475. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Lighter than the average, but still deep red and hairy when ripe."
52028. Variety *niloticus*. "(No. 1477. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very heavy, light hairy, not very ripe."
52029. Variety *niloticus*. "(No. 1483. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Dark colored; flowers sparse."
52030. Variety *rogelianus*. "(No. 1307. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large flowers and head."
52031. Undescribed variety *a*. "(No. 1515. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Light."
52032. Undescribed variety *a*. "(No. 1517. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Darker than No. 1515 [S. P. I. No. 52031]."

51898 to 52267—Continued.

52033. Undescribed variety *a*. "(No. 1518. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 967.) Darker than No. 1515 [S. P. I. No. 52031]."
52034. Undescribed variety *b*. "(No. 1520. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Small, dark."
52035. Undescribed variety *c*. "(No. 1389. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52036. Undescribed variety *c*. "(No. 1392. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52037. Undescribed variety *d*. "(No. 1476. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very dark and very hairy."
52038. Undescribed variety *d*. "(No. 1478. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Dark with white hairs."
52039. Undescribed variety *d*. "(No. 1479. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Heavy; light-red chaff."
52040. Undescribed variety *d*. "(No. 1480. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Heavy; light-red chaff."
52041. Undescribed variety *d*. "(No. 1481. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very light color; heavy flower."
52042. Undescribed variety *d*. "(No. 1482. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Very light color; heavy flower."
52043. Undescribed variety *d*. "(No. 1484. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Deep red-dish even when young; large flower."
52044. Undescribed variety *d*. "(No. 1485. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Deep red-dish even when young; large flower."
52045. Undescribed variety *d*. "(No. 1486. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Rather light, hairy; hull reddish."
52046. Undescribed variety *d*. "(No. 1487. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Rather light, hairy; hull reddish."
52047. Undescribed variety *e*. "(No. 1311. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awnless; heavy head."
52048. Undescribed variety *e*. "(No. 1308. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Awnless; small head, large flower."
52049. Undescribed variety *e*. "(No. 1369. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52050. Undescribed variety *f*. "(No. 1374. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Collected in a field just across from Rejaf."
52051. *HOLCUS SORGHUM DRUMMONDII* (Nees) Hitchc. Poaceae.
Chicken corn.
"(No. 1506. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 958.) Black-seeded type of sorghum."

51898 to 52267—Continued.

- 52052 to 52087. *HOLCUS SORGHUM EFFUSUS* (Hack.) Hitchc. Poaceae.
Kamerun grass.
52052. "(No. 1212. Kampala, Buganda Province, Uganda. July 12, 1920.) A small type of sorghum; many of the plants are no over a foot high; may be distinct."
52053. "(No. 1221. Jinja, Eastern Province, Uganda. July 13, 1920.) Sorghum."
52054. "(No. 1223. Namasagali, Eastern Province, Uganda. July 13, 1920.) Light, small-seeded type."
52055. "(No. 1231. Namasagali, Eastern Province, Uganda. July 13, 1920.) A rather dark type."
- 52056 to 52063. "(Nos. 1232, 1236, 1240, 1241, 1243, 1246, 1247, 1250. Namasagali, Eastern Province, Uganda. July 13, 1920.) All these numbers were collected near the Nile on land previously cultivated by the natives, the soil naturally producing tall Cymbopogon and Panicumlike grasses, much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine, kafir, and corn are also grown."
52064. "(No. 1314. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) Large, awned heads."
- 52065 to 52067. "(Nos. 1336, 1337, 1340.) Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum heads typical of this section."
52068. "(No. 1353. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Sorghum; awned and rather light."
52069. "(No. 1354. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Similar to the preceding number."
52070. "(No. 1355. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) Similar to the preceding number; a slender reddish type."
52071. "(No. 1356. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A light-colored type."
52072. "(No. 1360. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) Sorghum collected near Shindurru."
- 52073 to 52086. "(Nos. 1376-1380, 1384, 1386, 1388, 1390, 1393, 1394, 1396-1398. Nile bank, opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) All these sorghums were collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful whether many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."
52087. "(No. 1519. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Small dark sorghum."
- 52088 to 52118. *HOLCUS SORGHUM EXIGUUS* (Forsk.) Hitchc. Poaceae.
Tunis grass.
52088. "(No. 1286. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum collected between Escarpment and Butiaba (7 miles)."
52089. "(No. 1287. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum collected between Escarpment and Butiaba (7 miles)."
- 52090 to 52092. "(Nos. 1400-1402. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Sorghums collected in a great field of wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."

51898 to 52267—Continued.

52093. "(No. 1424. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1423 [S. P. I. No. 52021]."
52094. "(No. 1425. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1423 [S. P. I. No. 52021]."
52095. "(No. 1426. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Deep-red awned type."
52096. "(No. 1427. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, awned type."
52097. "(No. 1428. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to No. 1427 [S. P. I. No. 52096]."
52098. "(No. 1430. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, hairy, awned."
52099. "(No. 1432. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Awned, rather light type."
52100. "(No. 1435. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather red, awned, hairy type."
52101. "(No. 1436. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Rather light, awned, hairy type."
52102. "(No. 1437. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Purplish, awned, hairy type."
52103. "(No. 1438. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dark, awned, hairy type."
52104. "(No. 1439. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Light, awned, hairy type."
52105. "(No. 1440. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Light, awned, hairy type."
52106. "(No. 1441. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Dense head; reddish, awned, hairy."
52107. "(No. 1442. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to the preceding number, but with a more open head."
52108. "(No. 1443. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Similar to the preceding number."
52109. "(No. 1444. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Reddish, awned, hairy type."
52110. "(No. 1445. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Awned, hairy, and a little darker than the preceding number."
52111. "(No. 1446. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Same as the preceding number."
52112. "(No. 1447. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Very dark, awned."
52113. "(No. 1450. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Red, awned, hairy."
52114. "(No. 1451. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Black seed, awned, hairy."
52115. "(No. 1452. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) A hairy, awned type."
52116. "(No. 1473. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 6, 1920.) Wild sorghum seeds collected in bulk from hundreds of plants along the river flats. It should reproduce for us practically all types found here."
52117. "(No. 1507. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920. Herb. No. 959.) A light type of sorghum, hairy, and small awned."

51898 to 52267—Continued.

52118. "(No. 1509. Taufikia, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Glaucous, red or orange, unawned, a striking type."
- 52119 to 52166. *HOLCUS SORGHUM VERTICILLIFLORUS* (Steud.) Hitchc. [Poaceæ. **Tabucki grass.**
52119. "(No. 1223. Namasagali, Eastern Province, Uganda. July 13, 1920.) Light, small-seeded type."
52120. "(No. 1224. Namasagali, Eastern Province, Uganda. July 13, 1920.) Dark, small-seeded type."
52121. "(No. 1225. Namasagali, Eastern Province, Uganda. July 13, 1920.) Rather light."
52122. "(No. 1226. Namasagali, Eastern Province, Uganda. July 13, 1920.) Rather light."
52123. "(No. 1227. Namasagali, Eastern Province, Uganda. July 13, 1920.) A black-seeded type."
52124. "(No. 1228. Namasagali, Eastern Province, Uganda. July 13, 1920.) Heavy, black type."
52125. "(No. 1229. Namasagali, Eastern Province, Uganda. July 13, 1920.) Slender, black seed."
52126. "(No. 1230. Namasagali, Eastern Province, Uganda. July 13, 1920.) Large, heavy type."
- 52127 to 52138. "(Nos. 1232a, 1233, 1234, 1235, 1237, 1238, 1242, 1244, 1245, 1251-1253. Namasagali, Eastern Province, Uganda. July 13, 1920.) These numbers were collected near the Nile on land which naturally produces tall *Cymbopogon* and *Panicum*like grasses, previously cultivated by the natives. Much like the Kongo at Kabalo. The chief crop here is the banana, which is used as a vegetable and as a fruit. Eleusine and kafir corn are also grown."
52139. "(No. 1255. Jinja, Eastern Province, Uganda. July 13, 1920.) Sorghum; a small type."
52140. "(No. 1258. Jinja, Eastern Province, Uganda. July 13, 1920.) A small type."
52141. "(No. 1260. Misindi Port, Northern Province, Uganda. July 16, 1920.) Sorghum abundant along the road."
52142. "(No. 1271. Misindi, Northern Province, Uganda. July 18, 1920.) A dark type."
52143. "(No. 1272. Misindi, Northern Province, Uganda. July 18, 1920.) A rather light hairy type with very dark seed."
52144. "(No. 1273. Misindi, Northern Province, Uganda. July 18, 1920.) A tall, dark type."
52145. "(No. 1281. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Sorghum."
- 52146 to 52151. "(Nos. 1283, 1284, 1285, 1288, 1289, 1290. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) These numbers were collected between Escarpment and Butiaba (7 miles)."
52152. "(No. 1319. Suwara River, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) Sorghum about 12 feet high."
52153. "(No. 1339. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Sorghum, typical of this section."
- 52154 to 52162. "(Nos. 1375, 1381, 1382, 1383, 1385, 1387, 1391, 1395, 1399. Nile bank opposite Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Sorghums collected in a great field of this wild grass just across from Rejaf. They probably represent types found here and should be carefully studied. Wide variation is shown, and it is doubtful if many forms occur that are not included in this set. Sorghums are not used for any purpose here by the natives."

51898 to 52267—Continued.

52163. "(No. 1404. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A dark head."

52164. "(No. 1405. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A light head."

52165. "(No. 1406. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) Intermediate between Nos. 1404 and 1405 [S. P. I. Nos. 52163 and 52164]."

52166. "(No. 1516. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) Darker than No. 1515 [S. P. I. No. 52031]."

52167. *HORDEUM VULGARE PALLIDUM* Seringe. Poaceæ. Barley.

"(No. 1534. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 14, 1920.) Barley."

52168. *IPOMOEA* sp. Convolvulaceæ. Morning-glory.

"(No. 1211. Entebbe, Buganda Province, Uganda. July 12, 1920.) A very attractive large-flowered ornamental shrub abundant at Kisumu."

52169. *IPOMOEA* sp. Convolvulaceæ. Morning-glory.

"(No. 1499. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Wild morning-glory; did not see it in flower. Probably an annual."

52170. *KIGELIA PINNATA* (Jacq.) DC. Bignoniaceæ.

"(No. 1544. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) 'Sausage tree,' one of the most common African trees; used as a street tree here in Khartum."

For previous introduction, see S. P. I. No. 38698.

52171. *LEPTOCHLOA* sp. Poaceæ. Grass.

"(No. 1292. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) A tall grass found just below Escarpment."

52172. *LUPINUS TERMIS* Forsk. Fabaceæ. Lupine.

"(No. 1538. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) A large, white-seeded legume."

52173. *LYCOPERSICON ESCULENTUM* Mill. Solanaceæ. Tomato.

"(No. 1341. Moku, Mongalla Province, Anglo-Egyptian Sudan. July 25, 1920.) Tomato grown at Liri. Collected July 21, 1920."

52174. *MANISURIS EXALTATA* (L. f.) Kuntze. Poaceæ. Grass.
(*Rottboellia exaltata* L. f.)

"(No. 1514. Malakal, Upper Nile Province, Anglo-Egyptian Sudan. August 13, 1920.) A few ripe seeds of a grass very abundant throughout central Africa."

52175. *MOMORDICA* sp. Cucurbitaceæ.

"(No. 1344. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) An orange-colored cucurbit with processes (similar to a rambutan in appearance)."

52176. *MORINGA OLEIFERA* Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)

"(No. 1315. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) An ornamental white-flowered tree with long three-sided pods with a single row of winged seeds."

For previous introduction, see S. P. I. No. 46386.

52177. *NICOTIANA TABACUM* L. Solanaceæ. Tobacco.

"(No. 1261. Near Atura, Eastern Province, Uganda. July 16, 1920.) Tobacco grown by the natives at a wood station."

52178. *PANICUM* sp. Poaceæ. Grass.

"(No. 1293. Escarpment, near Butiaba, Northern Province, Uganda. July 19, 1920.) Tall, coarse grass, mostly in thickets."

51898 to 52267—Continued.

52179. *Panicum* sp. Poaceæ.

Grass

“(No. 1303. Panyamur, Northern Province, Uganda. July 20, 1920.)
A grass which forms the zone next to the water’s edge.”

52180. *Parkinsonia aculeata* L. Cæsalpiniaceæ.

“(No. 1513. Malakal, Upper Nile Province, Anglo-Egyptian Sudan.
August 13, 1920.) Seed of a prominent street tree; the leaflets are very
small, almost nothing left but the midrib.”

For previous introduction, see S. P. I. No. 48176.

52181. *Pennisetum glaucum* (L.) R. Br. Poaceæ.

Pearl millet.

“(No. 1541. Omdurman, Khartum Province, Anglo-Egyptian Sudan.
August 18, 1920.) *Pennisetum*.”

52182. *Pennisetum purpureum* Schumacher. Poaceæ.

Grass.

“(No. 1214. Port Bell, Buganda Province, Uganda. July 13, 1920.)
Elephant grass; used like bamboo, for building houses. A house can be
built from grass covering the area of its foundation and extending 6 feet
around. It supplies material both for sides and roof. This grass is
also used to make paper and is eaten by elephants and buffalo. It grows
on good soil.”

52183. *Pennisetum* sp. Poaceæ.

Grass.

“(No. 1362. Shindurru to Nyonki, Mongalla Province, Anglo-Egyptian
Sudan. July 28, 1920.) A tall *Chaetochloa*-like grass.”

52184 and 52185. *Phaseolus aureus* Roxb. Fabaceæ. Mung bean.

52184. “(No. 1497. Simsim, Mongalla Province, Anglo-Egyptian
Sudan. August 8, 1920.) Small green bean commonly grown by
the Bori.”

52185. “(No. 1208a. Kisumu, Nyanza Province, Kenia. July 11,
1920.) Beans from the market.”

52186 to 52209. *Phaseolus vulgaris* L. Fabaceæ. Common bean.

“(No. 1265. Misindi, Northern Province, Uganda. July 17, 1920.)
Beans from the market.”

52186. 1. Small black beans about twice as long as wide.

52187. 2. Long maroon beans with small cream-colored flecks.

52188. 3. Long gray beans with small white flecks and dark ring
around the hilum.

52189. 4. Short lavender beans with dark ring.

52190. 5. Short drab beans with dark ring.

52191. 6. Short light-brown beans with dark ring.

52192. 7. Short light-green beans with brown ring.

52193. 8. Short greenish tan beans with brown ring.

52194. 9. Long yellowish tan beans with dark ring.

52195. 10. Long tan beans with dark-brown ring.

52196. 11. Large long red beans.

52197. 12. Long narrow light-red beans.

52198. 13. Light-pink beans with stripes and flecks of maroon.

52199. 14. Small flat dull-tan beans.

52200. 15. Light and dark tan beans with dark stripes.

52201. 16. Long cream beans with dark-red mark through hilum.

52202. 17. Long broad white beans.

52203. 18. Small short white beans.

52204. 19. “(No. 1208b. Kisumu, Nyanza Province, Kenia. July
11, 1920.)” A broad flat white bean.52205. 20. “(No. 1208c.)” Brownish tan with stripes and flecks of
maroon.

52206. 21. “(No. 1208d.)” Small long narrow black beans.

52207. 22. “(No. 1208e.)” Large long narrow red beans.

51898 to 52267—Continued.

52208. 23. "(No. 1208f.)" Gray and tan with various stripes and spots.

52209. 24. "(No. 1208g.)" Long narrow beans with light-brown color overlaid with darker stripes and flecks.

52210. *PHOENIX RECLINATA* Jacq. *Phoenicaceæ*. Palm.

"(No. 1217. Port Bell, Buganda Province, Uganda. July 13, 1920.) A wild date palm; one of the most graceful African palms."

For previous introduction, see S. P. I. No. 51234.

52211. *RHAMPHICARPA FISTULOSA* (Hochst.) Benth. *Scrophulariaceæ*.

"(No. 1416. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920. Herb. No. 937.) A plant that resembles a larkspur, but with a small white flower like a petunia. It should be an excellent annual border plant; it grows on rocks at the edge of tall grass. The flower is three-fourths of an inch across and produces an abundance of seeds."

52212 and 52213. *RICINUS COMMUNIS* L. *Euphorbiaceæ*. Castor-bean.

52212. "(No. 1346. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A small type grown about native huts."

52213. "(No. 1421. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) *Ricinus*."

52214. *RUBUS* sp. *Rosaceæ*. Raspberry.

"(No. 1290. Near the forest of Budongo, Northern Province, Uganda. July 19, 1920.) A red raspberry; a very good fruit."

52215. *SACCHARUM SPONTANEUM* L. *Poaceæ*. Grass.

"(No. 1318. Suwara River, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.)"

For previous introduction, see S. P. I. No. 33257.

52216. *SCLEROCARYA CAFFRA* Sond. *Anacardiaceæ*.

"(No. 1317. Nimule to Suwara, Mongalla Province, Anglo-Egyptian Sudan. July 23, 1920.) *Mongo*; a round or globular lime-colored fruit, about 2 inches in diameter, with a very thick skin and a sweet agreeable taste. The seed has many fibers extending outside. *Mungo* is a name used in the Kongo at Kabalo."

For previous introduction, see S. P. I. No. 49315.

52217 to 52219. *SESAMUM ORIENTALE* L. *Pedalaceæ*. Sesame.

52217. "(No. 1268. Misindi, Northern Province, Uganda. July 17, 1920.) Sesame."

52218. "(No. 1498. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Sesame grown by Bori."

52219. "(No. 1305. Panyamur, Northern Province, Uganda. July 20, 1920.) Native-grown sesame."

52220 and 52221. *SOLANUM NAUMANNI* Engl. *Solanaceæ*.

52220. "(No. 1262. Misindi Port, Northern Province, Uganda. July 16, 1920.) An eggplant as red as a tomato, but pointed at the tip; from the market at Misindi."

52221. "(No. 1263. Misindi Port, Northern Province, Uganda. July 16, 1920.) An eggplant as red as a tomato, but rounded at the tip; from the market at Misindi."

52222. *SOLANUM MELONGENA* L. *Solanaceæ*. Eggplant.

"(No. 1501. Tombe, Mongalla Province, Anglo-Egyptian Sudan. August 9, 1920.) A white or very light green eggplant about 4 to 5 inches long and long obovoid in shape."

52223. *SPOROBOLUS FIMBRIATUS* Nees. *Poaceæ*. Grass.

"(No. 1006. Uaso Nyiro River, Kenia. July 28, 1920.) A tall grass which seems valuable and is abundant along the banks of the river; it is eaten by wild game. It may withstand small amounts of black alkali."

51898 to 52267—Continued.

52224. *SPOROBOLUS INDICUS* (L.) R. Br. Poaceæ.

Grass

"(No. 1345. Between Uma and Regu, Mongalla Province, Anglo-Egyptian Sudan. July 26, 1920.) A tall grass."

For previous introduction, see S. P. I. No. 51160.

52225. *TRICHILIA* sp. Meliaceæ.

"(No. 1358. Kirillu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A large tree with tricarpellate pods; the seed is red with dark spots. In the Kongo region this is known as *kihellahella*."

52226. *TRICHODESMA ZEYLANICUM* (Burm. f.) R. Br. Boraginaceæ.

"(No. 1326. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A small borage with rather pretty flowers."

52227. *TRITICUM AESTIVUM* L. Poaceæ.

Common wheat

(*T. vulgare* Vill.)

"(No. 1536. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Wheat (Mugami)."

52228. *URENA LOBATA* L. Malvaceæ.

"(No. 1274. Misindi, Northern Province, Uganda. July 18, 1920.) A plant with a small light-pink flower 1 inch in diameter."

For previous introduction, see S. P. I. No. 50089.

52229. *VIGNA CYLINDRICA* (Stickm.) Skeels. Fabaceæ.

Catjang

"(No. 1328. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A small Vigna cultivated by the natives and eaten green or ripe."

52230 to 52232. *VIGNA SINENSIS* (Torner) Savi. Fabaceæ. Cowpea

52230. "(No. 1208h. Kisumu, Nyanza Province, Kenya. July 11, 1920.)" A small dull-red variety.

52231. "(No. 1208i. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Medium-sized clay-colored and white seeds."

52232. "(No. 1540. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) *Iuba* or *Hena theil*; a small bean."

52233. *VIGNA* sp. Fabaceæ.

"(No. 1194. Kisumu, Nyanza Province, Kenya. July 11, 1920.) A Vigna with a small hairy pod; it is a very poor seed producer."

52234. *VIGNA* sp. Fabaceæ.

"(No. 1219. Jinja, Eastern Province, Uganda. July 13, 1920.) A Vigna with velvet pods and blue flowers."

52235. *VIGNA* sp. Fabaceæ.

"(No. 1220. Jinja, Eastern Province, Uganda. July 13, 1920.) A Vigna with smooth pods and leaves and yellow flowers."

52236. *VIGNA* sp. Fabaceæ.

"(No. 1351. Regu, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A Vigna with long narrow pods."

52237. *VIGNA* sp. Fabaceæ.

"(No. 1364. Near Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 28, 1920.) A wild Vigna similar to No. 1351 [S. P. I. No. 52236]."

52238 to 52254. *ZEA MAYS* L. Poaceæ.

Corn.

52238. "(No. 1206. Kisumu, Nyanza Province, Kenya. July 11, 1920.) Corn from a native field. This ear is small, but large ones are produced."

52239. "(No. 1208j. Kisumu, Nyanza Province, Kenya. July 11, 1920.) From the market." Broad, flat, cream-colored kernels.

52240. "(No. 1296. Mabagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Yellow flint with a few dark kernels."

52241. "(No. 1297. Mabagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Red and deep-red kernels in thick irregular rows."

51898 to 52267—Continued.

52242. "(No. 1298. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) A dark-blue ear with a few yellow kernels."
52243. "(No. 1299. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Deep red in irregular rows."
52244. "(No. 1300. Mahagi, Ituri Province, Belgian Kongo, on Lake Albert. July 20, 1920.) Purple and yellow."
52245. "(No. 1408. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) All native yellow flint."
52246. "(No. 1409. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) Yellow flint with starch tips to many of the kernels."
52247. "(No. 1410. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) White flint."
52248. "(No. 1411. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) Yellow and white flint mixed."
52249. "(No. 1412. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) A small white waxy ear."
52250. "(No. 1413. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 3, 1920.) A red ear."
52251. "(No. 1490. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Red ear."
52252. "(No. 1491. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) Yellowish."
52253. "(No. 1492. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) White flint."
52254. "(No. 1493. Mongalla, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) White flint with purple cob."
- 52255. ZIZIPHUS MUCRONATA Willd. Rhamnaceæ.**
 "(No. 1542. Omdurman, Khartum Province, Anglo-Egyptian Sudan. August 18, 1920.) Edible Ziziphus sold in the market."
- 52256. (Undetermined.)**
 "(No. 1213. Kampala, Buganda Province, Uganda. July 12, 1920.) A leguminous plant with pink flowers. It is quite abundant here and may be useful as a cover crop."
- 52257. (Undetermined.)**
 "(No. 1215a. Port Bell, Buganda Province, Uganda. July 13, 1920.) A bean with small clustered flowers and pods. Very abundant in central Africa."
- 52258. (Undetermined.)**
 "(No. 1216. Port Bell, Buganda Province, Uganda. July 13, 1920.) A legume; a very small form which may be good for citrus orchards."
- 52259. (Undetermined.)**
 "(No. 1269. Misindi, Northern Province, Uganda. July 17, 1920.) Fruit eaten by baboons in Bodongo forest."
- 52260. (Undetermined.)**
 "(No. 1282. Escarpment near Butiaba, Northern Province, Uganda. July 19, 1920.) A small Rhuslike tree with pretty foliage and berries."
- 52261. (Undetermined.)**
 "(No. 1316. Nimule, Mongalla Province, Anglo-Egyptian Sudan. July 22, 1920.) A small leguminous shrub or low bush."
- 52262. (Undetermined.)**
 "(No. 1329. Lur, Mongalla Province, Anglo-Egyptian Sudan. July 27, 1920.) A fruiting vine similar to Strychnos; the fruit is eaten by birds."
- 52263. HEDYOTIS sp. Rubiaceæ.**
 "(No. 1367. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A plant with a small starlike flower with a very long tube."

51898 to 52267—Continued.

52264. (Undetermined.)

"(No. 1368. Nyonki, Mongalla Province, Anglo-Egyptian Sudan. July 29, 1920.) A long, red, gradually pointed cucumber."

52265. (Undetermined.)

"(No. 1419. Rejaf, Mongalla Province, Anglo-Egyptian Sudan. August 5, 1920.) A cucurbit; eaten by birds. The smooth fruit is reddish when ripe and very bitter when green."

52266. (Undetermined.)

"(No. 1500. Simsim, Mongalla Province, Anglo-Egyptian Sudan. August 8, 1920.) A small red fruit which seems to be a cucurbit. There are two seeds in each fruit. It is valuable as an ornamental, but is not eaten."

52267. (Undetermined.)

"(No. 1529. Shikaba, Upper Nile Province, Anglo-Egyptian Sudan. August 14, 1920.) *Mahaleb*; black shiny seed."

52268. PAULOWNIA FORTUNEI (Seem.) Hemsl. Scrophulariaceæ.

From Taihoku, Taiwan, Japan. Seeds presented by R. Kanchira, director, Experimental Station of Forestry. Received December 17, 1920.

This tree is originally from eastern China. The elongated calyxes are glabrous and shining, except around the upper edge, which is yellowish pubescent. The tree does not attain the height of *Paulownia tomentosa*, but the whitish, spotted flowers are larger than those of *P. tomentosa*. The leaves are much longer and covered beneath with a short, dense, white pubescence. (Adapted from *Bulletin de la Société Dendrologique de France*, 1908, p. 162.)

For previous introduction, see S. P. I. No. 47164.

52269 to 52280. VICIA spp. Fabaceæ.

Vetch.

From Erfurt, Germany. Seeds purchased from Haage & Schmidt. Received December 21, 1920.

52269. VICIA ATROPURPUREA Desf.

Purple vetch.

"The purple vetch is indigenous to the Mediterranean region. It is a viny annual which under favorable circumstances makes a stem growth of 4 or 5 feet. It is slightly less winter hardy than common vetch (*Vicia sativa*) and is adapted for growing as a winter annual only in the milder parts of the United States. It is especially valuable for green manure in the southwestern United States. Its seed habits are good, and it is also desirable as a hay and pasture crop." (Roland McKee.)

52270. VICIA CRACCA L.

"Tufted vetch. Occurs as a native in America, as well as in Europe and Asia. It is a perennial with slender viny stems which under favorable circumstances attain a height of 3 feet. The seed habits are poor and the seed is difficult to harvest. It is relished by all kinds of stock and is considered valuable pasturage. The good qualities of this vetch make it worthy of attention as a crop to be grown under cultivation." (Roland McKee.)

52271. VICIA HIRSUTA (L.) S. F. Gray.

A sparsely hardy annual with several prostrate or climbing slender knotty stems, 2 to 6 decimeters high, sometimes shorter, square ridged. The sessile leaves consist of 6 to 10 pairs of short, linear leaflets; the lower leaves are elliptic, notched at the edge, mostly 1 to 2 centimeters long and 1 to 2 millimeters wide. The inflorescence, 3 to 4 millimeters long, mostly 3 to 8 flowered, has a short, bearded tip. The flowers are bluish white. Found in grasslands, thickets, and steppe formations throughout middle Europe, also in the islands of the North Sea. (Adapted from *Ascherson and Graebner, Synopsis der Mitteleuropäischen Flora*, p. 906.)

52269 to 52280—Continued.

52272. *VICIA HYBRIDA* L.

"An annual vetch, native to the Mediterranean region and requiring about the same climatic conditions as the common vetch (*Vicia sativa*). It is a less vigorous grower than either common or hairy vetch (*V. villosa*) and for this reason less well adapted for growing under cultivation. However, it may be of value for pasturage." (*Roland McKee.*)

52273. *VICIA MACROCARPA* Bertol.

"Native to Europe and very closely allied to common vetch (*Vicia sativa*). It has larger seed and heavier seed pods than common vetch, but otherwise differs but little. The climatic and other requirements are the same as for common vetch." (*Roland McKee.*)

For previous introduction, see S. P. I. No. 18813.

52274. *VICIA PANNONICA* Crantz.

"*Hungarian vetch.* An annual vetch native to Europe and Asia. It makes a less viny growth than common vetch (*Vicia sativa*) or hairy vetch (*V. villosa*), but is a vigorous grower attaining a full stem length of 2½ to 3 feet. It is more winter hardy than common vetch and will seldom winterkill as far north as Washington, D. C. This species is especially adapted to poorly drained areas and is the best of the vetches in this regard." (*Roland McKee.*)

52275. *VICIA ATROPURPUREA* Desf.

Purple vetch.

See S. P. I. No. 52269 for description.

52276. *VICIA SATIVA* L.

"*Common vetch.* An annual, native to Europe, Africa, and Asia. Many varieties have long been in cultivation. Most of these are well adapted to the Pacific Coast States, but only a few are winter hardy in our Southern States. Common vetch is a little less viny than hairy vetch and under favorable conditions attains a height of 3 to 4 feet. It is well adapted for use as green manure, hay, and pasturage." (*Roland McKee.*)

52277. *VICIA SATIVA LEUCOSPERMA* (Moench) Seringe.

"This subspecies includes the varieties of common vetch with light-colored seeds, many of which are especially adapted in mild climates for late winter or early spring planting. Except in the color of the seed, they are quite like common vetch." (*Roland McKee.*)

52278. *VICIA SEPIUM* L.

"*Bush vetch.* A perennial species native to Europe and Asia. It is semiupright or bushy in habit. Stock of all kinds relish this species and it affords good pasturage." (*Roland McKee.*)

52279. *VICIA SYLVATICA* L.

"A perennial species native to Europe, occurring in shaded woody situations. It is relished by stock and makes valuable pasturage." (*Roland McKee.*)

52280. *VICIA VILLOSA* Roth.

"*Hairy vetch* is an annual native to western Asia, sometimes called sand vetch or Russian vetch, and has been found adapted to nearly all parts of the United States. It produces large crops of excellent hay, but owing to its habit of growth is somewhat difficult to mow. In drought resistance it is perhaps the best of the vetches. It will also stand severe cold, so that it is rarely frozen out even in the northernmost States. This makes it particularly valuable as a winter cover and green-manure crop. Hairy vetch often volunteers and persists, and on this account it is somewhat objectionable where wheat is grown. It is difficult to separate hairy vetch seed from wheat. Seed of hairy vetch weighs 60 pounds to the bushel. A varying proportion of the seed is hard, and this does not germinate for some months. Largely on this account hairy vetch is inclined to persist where once planted. It gives the best results when planted on well-tilled and well-drained land. It may be cured as hay or used green as a soiling crop. For soiling purposes a succession of crops can be maintained by sowing at various

52269 to 52280—Continued.

dates. Where the winters are mild it is possible to use the vetch as green feed all through the autumn and early winter and up to June or later in the summer." (C. V. Piper.)

For previous introduction, see S. P. I. No. 34361.

52281 to 52297.

From Sheharunpur, Punjab, India. Seeds presented by A. C. Hartless, superintendent, Government Botanic Gardens. Received December 24, 1920.

52281. ACACIA SUMA (Roxb.) Kurz. Mimosaceæ.

A medium-sized tree with white bark and downy branchlets armed with pairs of short-hooked spines. The 20 to 40 pinnae bear 60 to 100 leaflets; the gum catechu is said to be made from the heartwood of this tree. The bark is peeled off and used for tanning. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 60.)

52282. ADINA CORDIFOLIA (Roxb.) Benth. and Hook. Rubiaceæ.

A large handsome deciduous tree found in the foothills of the Himalayas from Jumna eastward, ascending to altitudes of 3,000 feet, and extending throughout the moister regions of India, Burma, and Ceylon. It is common in the western peninsula, in the Central Provinces, and all over Burma from Chittagong and Ava to Pegu and Martaban. The leaves are cordate; the yellow flowers are borne in small heads. The wood seasons well, takes a good polish, and is valued for turning, for construction work, furniture, and agricultural implements. (Adapted from Watt, *Dictionary of the Economic products of India*, vol. 1, p. 115.)

52283. ANOGEISSUS LATIFOLIA (Roxb.) Wall. Combretaceæ.

A large handsome tree met with in the sub-Himalayan tract, from the Ravi eastward, ascending to 3,000 feet in central and southern India. It yields a gum which is extensively used in calico printing. The leaves yield a black dye and are very useful in tanning. The gray, hard, shining wood is highly valued on account of its great strength and toughness, but it splits in seasoning and unless kept dry is not very durable. It is used for ax handles, poles for carrying loads, for furniture, agricultural implements, and in shipbuilding. It gives an excellent charcoal. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 257.)

52284. ANOGEISSUS PENDULA Edgeworth. Combretaceæ.

A small gregarious tree with pendulous branches, found in the arid and northern dry zones of Rajputana-Malwa Plateau, as far as the Nerbudda, in Nimar, and in the Mandla District. The leaves are small, the tree coppices well; the yellowish white wood is hard, but is not in general use. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 1, p. 258.)

For previous introduction, see S. P. I. No. 33555.

52285. CELTIS AUSTRALIS L. Ulmaceæ.

A moderate-sized deciduous tree, found in the Suliman and Salt Ranges and throughout the Himalayas from the Indus to Bhutan, ascending to 8,500 feet; also in the Khasi Hills. It is extensively cultivated in southern Europe for fodder; cows fed on the leaves are supposed to give better milk. It is nowhere grown as a fruit tree in India, although the fruit is eaten by all classes and is esteemed. The fruit is remarkably sweet and is supposed to have been the lotus of the ancients, the food of the Lotophagi, which is described as sweet, pleasant, and wholesome and which Homer says was so delicious as to make those who ate it forget their native country. The berries are still eaten in Spain, and the modern Greeks are said to be very fond of them. The gray or yellowish gray wood, with irregular streaks of darker color, is tough and strong and is used for oars, whip handles, and for other purposes requiring toughness and elasticity. The branches are extensively employed in making hayforks, ramrods, and walking sticks. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 242.)

For previous introduction, see S. P. I. No. 48662.

52281 to 52297—Continued.

52286. CRATAEVA RELIGIOSA Forst f. Capparidaceæ.

A moderate-sized, distorted, unarmed tree, with deciduous three-foliolate leaves, found here and there under cultivation from the Ravi eastward to Assam, Manipur, and Burma; also in central and southern India and Bengal; probably wild in Malabar and Kanara. A favorite tree near temples and tombs. The fruit is mixed with mortar to form strong cement, and the rind is used as a mordant in dyeing. The bark of this tree is demulcent, sedative, and alterative tonic, and the fresh leaves and root bark are rubefacient and vesicant. The fruit is said to be sometimes eaten. The yellowish white wood is moderately hard, even grained, and used for drums, models, combs, and in turnery. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 2, p. 583.)

52287. DIOSPYROS MONTANA Roxb. Diospyraceæ.

A tree, often spinous, found native from the Himalayas (eastward from the Ravi) to Ceylon and Tenasserim. The thin ovate leaves are $2\frac{1}{2}$ inches long. The globose glabrous fruit is one-half inch to $1\frac{1}{2}$ inches in diameter. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 555.)

52288. DIOSPYROS PEREGRINA (Gaertn.) Guerke. Diospyraceæ.

(*D. embryopteris* Pers.)

A dense tree very common in India from the Himalayas (from the Jumna eastward) to Ceylon and Tenasserim and abundant in Bengal. The oblong obtuse leaves are coriaceous. The subglobose fruit, 1 to 2 inches in diameter, is glandular or rusty and usually four to eight seeded. (Adapted from Hooker, *Flora of British India*, vol. 2, p. 557.)

For previous introduction, see S. P. I. No. 33567.

52289. ERYTHRINA VESPERTILIO Benth. Fabaceæ.

Coral tree.

A tree, 30 to 40 feet in height, native to Australia, with soft wood used by the aborigines for making shields. It is exceedingly light and spongy and might perhaps be useful for floats for fishing nets. The logs were used by the aborigines for crossing rivers and creeks. (Adapted from Maiden, *Useful Native Plants of Australia*, p. 426.)

For previous introduction, see S. P. I. No. 42466.

52290. FICUS GLOMERATA Roxb. Moraceæ.

Fig.

A large tree of the Salt Range and Rajputana found along the sub-Himalayan tracts to Bengal, central and southern India, Assam, and Burma. The bark yields a black dye, and the bark, leaves, and fruit are used in medicine. The fruit is edible but inferior, though greedily eaten by cattle. The leaves are collected as fodder. The soft gray wood is not durable, though it lasts well under water and is used for well frames. (Adapted from Watt, *Dictionary of the Economic Products of India*, vol. 3, p. 351.)

For previous introduction, see S. P. I. No. 12111.

52291. HETEROPHRAGMA ADENOPHYLLUM (DC.) Seem. Bignoniaceæ.

A tree, 30 to 50 feet high, native to Assam and eastern Bengal and extending to Tenasserim and the Andamans. The pinnate leaves are 1 to $1\frac{1}{2}$ feet long and the subsessile, acute, or obtuse leaflets are 7 to 14 inches long and 5 inches wide. The stout, many-flowered, terminal panicles bear tomentose, tubular-ventricose flowers, rose or yellow, 2 inches in diameter, and hardly crisped or crenate. The cylindric spiral capsule is 1 to 3 feet long and 1 inch in diameter. (Adapted from Hooker, *Flora of British India*, vol. 4, p. 381.)

52292. KYDIA CALYCINA Roxb. Malvaceæ.

A tree native to the tropical regions of the Himalayas, from Kumaon eastward, and throughout the Western Ghats, with rounded cordate leaves, 4 to 5 inches long and 3 inches wide, glabrous above or with thinly scattered hairs, closely felted beneath. The much-branched, many-flowered inflorescence bears white or pink flowers. (Adapted from Hooker, *Flora of British India*, vol. 1, p. 348.)

For previous introduction, see S. P. I. No. 47702.

52281 to 52297—Continued.

52293. *MORINGA OLEIFERA* Lam. Moringaceæ. Horse-radish tree.
(*M. pterygosperma* Gaertn.)

"A small tree, cultivated as an ornamental in Cuba, usually 15 to 20 feet in height, erect, with compound leaves nearly a foot long. The white flowers are borne in panicles, and the slender pods are often a foot long." (*Wilson Popenoe*.)

For previous introduction, see S. P. I. No. 46386.

52294. *OWENIA CERASIFERA* F. Muell. Meliaceæ.

A small tree, native to Queensland, with pinnate leaves consisting of 6 to 10 obliquely oval-oblong, obtuse leaflets, $1\frac{1}{2}$ to 3 inches long, glabrous above, pubescent underneath. The black drupes are globular, $1\frac{1}{2}$ inches in diameter, with red flesh. (Adapted from *Bentham, Flora Australiensis*, vol. 1, p. 386.)

For previous introduction, see S. P. I. No. 32819.

52295. *PHYLLANTHUS EMBLICA* L. Euphorbiaceæ. Nelli.

A moderate-sized deciduous tree native to the forests of tropical India and Burma. It yields a gum which is little known. The fruit, known as the emblic myrobalan, is used as a medicine and also in dyeing and tanning. As the fruit ripens the tannic acid diminishes and the fruit becomes edible and even pleasant to eat. It is the size of a small gooseberry, with a fleshy outer covering and a hard three-celled nut containing six seeds. The fruit is used for preserves and is also prepared as a pickle. A sherbet made from the fruit is a favorite cooling drink. The leaves and bark are used for tanning; the leaves also make good fodder. The red, hard close-grained wood when well seasoned is flexible, tough, and tolerably straight grained. It is used for building purposes, furniture, agricultural implements, gunstocks, and is adapted for turning. (Adapted from *Watt, Dictionary of the Economic Products of India*, vol. 6, pt. 1, p. 217.)

For previous introduction, see S. P. I. No. 47751.

52296. *PUTRANJIVA ROXBURGHII* Wall. Euphorbiaceæ.

A moderate-sized evergreen tree, native to tropical India, where it occurs wild and cultivated from the lower Himalayas, in Kumaon, eastward and southward to Pegu and Ceylon. The obtuse, acute leaves are 2 to 3 inches long. The globose white-tomentose fruits are the size of a cherry. (Adapted from *Hooker, Flora of British India*, vol. 5, p. 336.)

For previous introduction, see S. P. I. No. 33581.

52297. *WRIGHTIA TOMENTOSA* Roem. and Schult. Apocynaceæ.

A small, usually crooked, deciduous tree with corky bark, native to tropical India, extending from the Indus eastward and southward to Ceylon, Burma, and Penang, ascending to 2,000 feet in the Himalayas. The densely tomentose, elliptic leaves are 3 to 6 inches long and $1\frac{1}{2}$ to 2 $\frac{1}{2}$ inches wide. The yellowish flowers, with orange coronal scales, occur in many-flowered cymes. (Adapted from *Hooker, Flora of British India*, vol. 3, p. 653.)

Received as *Wrightia mollissima*, which is now generally referred to *W. tomentosa*.

52298 to 52304.

From Cali, Valle del Cauca, Colombia. Collected by Wilson Popenoe. Agricultural Explorer of the United States Department of Agriculture. Received December 27, 1920. Quoted notes by Mr. Popenoe.

52298. *ANANAS SATIVUS* Schult. f. Bromeliaceæ. Pineapple.

"(No. 530. December 3, 1920.) Shoots of *Cambrai* pineapple. From the Hacienda Manuelita, near Palmira. This is an excellent pineapple, by far the best variety I have seen in Colombia, but apparently of very limited distribution. It is fairly common in the Cauca Valley, but is not grown on an extensive commercial scale.

"The fruit is oblong to oblong-conic, commonly tapering slightly toward the apex. It weighs 4 to 8 pounds and would probably attain even larger

52298 to 52304—Continued.

size under good cultivation. The surface is fairly smooth, the eyes being only slightly deeper than those of Smooth Cayenne. The flesh is pale yellow, exceedingly juicy, of rich, subacid flavor, and quite tender. While it does not equal Smooth Cayenne in sweetness and delicacy of flavor, it is a much better fruit. The plant is a large and vigorous grower with serrate leaves."

52299. *CARICA* sp. Papayaceæ.

"(No. 523a. November 22, 1920.) Seeds of *red-fruited papayuela*. From a garden near Armenia, Depto. de Caldas, at an altitude of about 5,000 feet. This is the most interesting form of *Carica* which I have discovered in Colombia. It is remarkable for the rich crimson color of its fruits. Whether or not this color will be inherited by its seedlings I do not know; if it is, then we have in this form a papaya of much interest for use in breeding. The stem and petioles of the plant are deep purple. The fruits are oblong-elliptic, about 4 inches long, and as they mature they assume a crimson color which is at length deep and rich and very attractive. The flesh is white, like the normal form of the species, rather acid, with an applelike scent. A cross between this species and *Carica papaya* might produce a new fruit of most attractive appearance."

52300. *PASSIFLORA MALIFORMIS* L. Passifloraceæ.

Granadilla.

"(No. 531a. December 3, 1920.) Seeds of *granadilla*, from the Call market. This is a species which I have not seen elsewhere in Colombia. The fruit is remarkable for its unusually hard shell. Except for this character and its pale-green color, it greatly resembles the fruit of *Passiflora edulis*. It is a better fruit than some of the other species of *Passiflora* found in Colombia."

For previous introduction, see S. P. I. No. 43330.

52301. *RHEEDIA MADRUNO* (H. B. K.) Planch. and Triana. Clusiaceæ.

"(No. 528. December 3, 1920.) Seeds of *madroño*. From the Hacienda Manuelita, near Palmira. This is a common tree, both wild and cultivated, in the Cauca Valley and a favorite fruit. It occurs at altitudes of 3,000 or 4,000 feet and probably will not, therefore, be sufficiently frost resistant for cultivation in California. It may succeed in southern Florida, and will, of course, be adapted to tropical regions, such as the West Indies.

"The tree, which reaches about 35 feet in height, is a handsome one. It is commonly pyramidal, sometimes rather slender, and its abundant foliage is dark green. The leaves are elliptic and about 6 inches long. The fruits are the size of a small lemon, and about the same color. The skin is thick and leathery and very rough; the flesh is whitish, translucent, and of an aromatic subacid taste which is very agreeable. The two or three rather large seeds are oblong.

"Compared with the more important tropical fruits, such as the mango, the *madroño* can not be considered of great value; yet the ornamental appearance of the tree and the pleasant flavor of the fruit make it well worth growing in tropical gardens."

52302. *RUBUS GLAUCUS* Benth. Rosaceæ.

"(No. 522a. November 22, 1920.) Seeds collected near the Hacienda Cajamarca, on the Quindio trail between Ibagué and Armenia, at an altitude of about 8,000 feet. [This plant has been described under S. P. I. No. 50691.] It is a common species in Central America and north-western South America, sometimes cultivated for its fruit, which is an excellent berry. Where not cultivated, the fruit produced by wild plants is very commonly gathered and sold in the markets of towns and cities.

"These seeds were taken from an unusually productive plant. Since scanty productiveness is the principal defect of this species, viewed from a horticultural standpoint, an effort to obtain strains more productive than the average seems well worth while. In addition to being a productive plant, this number can be recommended as producing fruits of excellent quality."

52298 to 52304—Continued.

52303. SOLANUM TUBEROSUM L. Solanaceæ.

Potato.

"(No. 529. December 3, 1920.) Tubers of *papa criolla* (native potato) from the Cali market. This is the common yellow-fleshed potato of the Andes, a variety of small size but remarkably rich flavor. The variety is said to be very early and to be suited to cultivation in a warmer climate than others. It is a round potato, here not commonly over 3 inches in diameter, deep rose-colored, with very deep eyes, a very thin skin which peels readily from the boiled tuber, and mealy flesh of rich yellow color and excellent quality. This appears to be a very interesting variety for trial in the United States."

For previous introduction, see S. P. I. No. 52316.

52304. (Undetermined.)

"(No. 527a. December 3, 1920.) From La Manuelita, near Palmira, Colombia. Seeds of *carbonero*, a mimosaceous tree, 60 feet high, cultivated in the Cauca Valley as a shade tree in coffee plantations. The tree, said to be an exceedingly rapid grower and to furnish timber of good quality, is rather attractive in appearance, with finely pinnate foliage and small whitish flowers. It seems to me worthy of trial in southern Florida as a quick-growing shade tree for planting along streets and avenues."

52305. MALUS SYLVESTRIS Mill. Malaceæ.

Apple.

(*Pyrus malus* L.)

From Rangiora, New Zealand. Cuttings presented by Ivory's Nurseries.
Received October 19, 1920.

"*Double Vigor*. This has been raised after many years of selection and with us is blight proof and much more vigorous in growth than the Northern Spy stocks which are generally used in this Dominion." (N. Goldsbury, of Ivory's Nurseries.)

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